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WRITINGS ON ARCHÆOLOGY.

By Clarence B. Moore.

Certain Shell Heaps of the St. Johns River, Florida, hitherto unexplored. The American Naturalist, Nov., 1892, to Jany., 1894, inclusive. Five papers with illustrations in text, and maps.

Certain Sand Mounds of the St. Johns River, Florida, Parts I and II. Journal of the Academy of Natural Sciences of Philadelphia, Philadelphia, 1894. Vol. X. Quarto, 130 and 123 pages. Frontispieces, maps, plates, illustrations in the text.

Certain Sand Mounds of Duval County, Florida; Two Mounds on Murphy Island, Florida; Certain Sand Mounds of the Ocklawaha River, Florida. Journ. Acad. Nat. Sci. of Phila., 1895. Vol. X. Quarto, 108 pages. Frontispiece, maps, plates, illustrations in text.

Additional Mounds of Duval and of Clay Counties, Florida; Mound Investigation on the East Coast of Florida; Certain Florida Coast Mounds north of the St. Johns River. Privately printed, Philadelphia, 1896. Quarto, 30 pages. Map, plates, illustrations in text.

Certain Aboriginal Mounds of the Georgia Coast. Journ. Acad. Nat. Sci. of Phila., 1897. Vol. XI. Quarto, 144 pages. Frontispiece, map, plates, illustrations in text.

Certain Aboriginal Mounds of the Coast of South Carolina; Certain Aboriginal Mounds of the Savannah River; Certain Aboriginal Mounds of the Altamaha River; Recent Acquisitions; A Cache of Pendent Ornaments. Journ. Acad. Nat. Sci. of Phila., 1898. Vol. XI. Quarto, 48 pages. Frontispiece, maps, illustrations in text.

Certain Aboriginal Remains of the Alabama River. Journ. Acad. Nat. Sci. of Phila., 1899. Vol. XI. Quarto, 62 pages. Map, illustrations in text.

Certain Antiquities of the Florida West-Coast. Journ. Acad. Nat. Sci. of Phila., 1900. Vol. XI. Quarto, 46 pages. Maps, illustrations in text.

Certain Aboriginal Remains of the Northwest Florida Coast, Part I; Certain Aboriginal Remains of the Tombigbee River. Journ. Acad. Nat. Sci. of Phila., 1901. Vol. XI. Quarto, 100 pages. Maps, illustrations in text.

Certain Aboriginal Remains of the Northwest Florida Coast, Part II. Journ. Acad. Nat. Sci. of Phila., 1902. Vol. XII. Quarto, 235 pages. Maps, illustrations in text.

Certain Aboriginal Mounds of the Central Florida West-Coast; Certain Aboriginal Mounds of the Apalachicola River. Journ. Acad. Nat. Sci. of Phila., 1903. Vol. XII. Quarto, 136 pages. Maps, illustrations in text.

Sheet-copper from the Mounds is not Necessarily of European Origin. American Anthropologist. Jan.–March, 1903. Plates in text.

The So-called "Hoe-shaped Implement." American Anthropologist, July–Sept., 1903. Illustrations in text.

Aboriginal Urn-burial in the United States. American Anthropologist, Oct.–Dec., 1904. Plate.

A Form of Urn-burial on Mobile Bay. American Anthropologist, Jan.–March, 1905.

Certain Aboriginal Remains of the Black Warrior River [Moundville]; Certain Aboriginal Remains of the Lower Tombigbee River; Certain Aboriginal Remains of Mobile Bay and Mississippi Sound; Miscellaneous Investigation in Florida. Journ. Acad. Nat. Sci. of Phila., 1905. Vol. XIII. Quarto, 206 pages. Maps, illustrations in text.

Moundville Revisited; Crystal River Revisited; Mounds of the Lower Chattahoochee and Lower Flint Rivers; Notes on the Ten Thousand Islands, Florida. Journ. Acad. Nat. Sci. of Phila., 1907. Vol. XIII. Quarto, 144 pages. Maps, illustrations in text.

Certain Mounds of Arkansas and of Mississippi (including Doctor Hrdlička's paper on the Crania). Journ. Acad. Nat. Sci. of Phila., 1908. Vol. XIII. Quarto, about 120 pages. Maps, illustrations in text, eight colored plates.

Antiquities of the Ouachita Valley

BY

CLARENCE B. MOORE.

PHILADELPHIA:
1909

MAP OF THE OUACHITA VALLEY AND BLACK RIVER

Scale in miles

0 10 20 30 40 50

1909

ANTIQUITIES OF THE OUACHITA VALLEY.

By Clarence B. Moore.

Introduction.

Ouachita[1] river has its source in central western Arkansas, and flowing easterly and southeasterly, enters the State of Louisiana, through which it follows a southerly course to its union with the Tensas and Little rivers, where the three combine to form Black river.

Black river is a tributary of Red river which, as the reader is aware, joins the Mississippi on its western side.

The principal affluents of Ouachita river, in order from north to south, are: Little Missouri river, Saline river, Bayou Bartholomew, Bayou d'Arbonne, and Boeuf river.

We have considered Little river to belong to the Ouachita valley, while Tensas river, paralleling the Mississippi, may be regarded as having a drainage basin of its own.

This report has to do with the antiquities of that part of the Ouachita valley which was investigated by us in November, 1908, and in January, February, March, and April, 1909.

We shall now indicate the extent of our season's work, explaining that it is our custom to have Mr. J. S. Raybon, for many years captain of the steamer from which our work is done, examine in advance such territory as it is our intention to explore, that the exact position of mounds and cemeteries may be determined and permission to investigate may be obtained from the owners, previous to our visit. In pursuance of this custom part of the summer and of the fall of 1908 was devoted to this work by Captain Raybon, travelling in a small, covered boat, with a companion, and stopping at each landing and at every other point on the rivers, which gave promise of revealing aboriginal remains. In this way were traversed the navigable length of the Ouachita river, which lies between Camden, Arkansas, and its union with Black river, a distance by water of a little more than 300 miles; the navigable part of Little river, from Georgetown down, about eighty-five miles by water.

[1] Locally pronounced *Washtaw*.

That part of the Ouachita valley afterward explored by us was: Ouachita river up to a point about twenty miles above Camden, or 320 miles by water, approximately; Bayou Bartholomew to Portland, Arkansas, about 134 miles by water, its full navigable length; Boeuf river to Alto, about 100 miles by water; Little river to a point somewhat below Georgetown.

Black river, also, which is about fifty miles in extent, by water, was carefully gone over by us, but nothing of interest was encountered in this overflow region, though considerable digging was done.

At Jonesville (formerly known as Troyville), which is at the union of Ouachita and Little rivers, are, within the limits of the town, a number of mounds in various stages of erosion, which are described in Reports[1] of the Bureau of American Ethnology.

In the lower Mississippi valley, of which the Ouachita valley is a part, but little archæological work has been done hitherto,[2] and but few objects from this region are in our museums.

In the territory investigated by us aboriginal burials had been made exceptionally in small mounds, occasionally in superficial parts of domiciliary mounds, and ordinarily in dwelling-sites. These dwelling-sites, as a rule, are but slightly above the general level of the surrounding ground, and only about one in ten of these sites contains burials or gives evidence of having done so. Nevertheless, it is on dwelling-sites that the student of the archæology of the Ouachita valley places his main reliance.

Throughout the overflow land doubtless many dwelling-sites have washed away in some cases and have been covered by alluvial deposit in others. In higher ground many sites have disappeared, or have partly disappeared, through long-continued cultivation.

On all sides we heard from the owners that their plantations had been under cultivation for long periods, some so much as seventy years; and doubtless others of these properties had been tilled for even a longer period.

The soil of the Ouachita valley, containing a proportion of sand, is readily affected by wash of rain, and this wash is particularly destructive in the case of ground that has been loosened by plow and harrow. Each year the loss is appreciable, especially when, as is often the case, the fields lie on a decided slope.

Hence, in the course of time, the soil accumulated through aboriginal occupancy, with any accompanying burials, wholly or in part disappears. Many owners distinctly recall the finding by themselves of human bones and of artifacts years ago in fields which yielded nothing of special interest to our investigation. Often on these fields we saw still remaining fragments of human bones and of pottery, though the layer of midden soil beneath was not sufficiently deep to contain burials.

[1] Twelfth Ann. Rep., p. 250, *et seq.* Twentieth Ann. Rep., p. 103.

[2] See W. H. Holmes, "Aboriginal Pottery of Eastern United States," Twentieth Ann. Rep. Bur. Am. Ethn., pp. 101 and 103.

Incidentally it may be said that our work during the season referred to was confined almost entirely to land that was, or had been, under cultivation. Along Bayou Bartholomew practically all land is cultivated, and along other waters visited by us the same is true of the arable sites.

When the aborigines selected dwelling-sites along rivers subject to overflow they naturally chose high ground; and later, when Europeans selected land to clear for cultivation, they were similarly influenced, especially as much of this ground already had been enriched by aboriginal deposits.

Now we shall consider those dwelling-sites which still remain notwithstanding all the factors that have contributed to their destruction.

A successful quest for dwelling-sites along the Ouachita valley is largely a matter of chance. Obviously one cannot search for them over the whole extent of each plantation one comes to, especially along Bayou Bartholomew, where plantations extend continuously on both sides throughout the length of the bayou. Therefore, one must depend largely on information derived from inhabitants, and from inhabitants of all classes.

Dwelling sites are often encountered near mounds, and most persons living in the vicinity of a mound are able to give information concerning its situation. Having determined the locality of the mound the investigator can search in its vicinity.

Many dwelling-sites, however, are apart from any tumulus, and a large proportion of inhabitants are not acquainted with the various features that indicate the presence of these sites, or perhaps, though familiar with these features, they fail to connect them with particular sites in the neighborhood. Hence one's discoveries depend greatly on the character of the persons one happens to meet, and it is obvious that even the most conscientious investigator in this region must fail to find some of the cemeteries which are situated along his line of work.

All these facts[1] in relation to the Ouachita valley will explain the difficulty of obtaining there a great quantity of desirable material. The investigator of the present time visits that locality many years too late. Nevertheless we unearthed some pottery which is to an extent distinctive and representative of the region, and fills a gap that has existed hitherto.

Perhaps a few words as to our means and method of work in the field may not be out of place.

Our steamer, with captain, pilot, engineer, and a crew of five men, had aboard, in addition, eight men who, with three of our crew, made a force of eleven to dig.

There were also of the party Dr. M. G. Miller, anatomist of the expedition, who has aided in all our field-work since its inception, and in putting through press

[1] Incidentally we may say that in a few cases permission to investigate was withheld or prohibitive conditions were imposed, but fortunately in no case, so far as we could learn, did we suffer these restrictions in connection with sites of importance.

all reports of our work; and Mr. Arthur W. Clime, who rendered efficient aid as general assistant.

Mr. W. D. Platt, of Ouachita, La., who served as pilot throughout the season, did not confine himself to his duties at the wheel, which his thorough knowledge of all the streams of the region enabled him to perform most satisfactorily, but aided us in every other way that lay in his power.

We have already referred to the work done by Mr. J. S. Raybon, our captain, previous to the starting of our expedition. Later, when Captain Raybon is in command of the steamer, that part of his time which is not devoted to navigation is given largely to the furtherance of our archæological work.

The warm thanks of the Academy of Natural Sciences are tendered Prof. William H. Holmes for introductory remarks on the pottery described in this report; Dr. Aleš Hrdlička for his paper descriptive of the human remains found and preserved by the expedition; Prof. F. A. Lucas for identification of bones of lower animals; Dr. H. A. Pilsbry and Mr. E. G. Vanatta for identification of shells; Mr. F. W. Hodge for literary revision of this report.

The Academy wishes also to express its gratitude to all owners of plantations and farms along Ouachita, Boeuf, and Little rivers and Bayou Bartholomew, who so generously placed their property at its disposal, and who aided our undertaking in various other ways.

The form of burial in the Ouachita region offers nothing distinctive in the main.

The bunched burial and the burial at length were numerous. The flexed burial was infrequently found, and a variety of urn-burial in two or three instances only.

The flexed burials and the burials at length, according to aboriginal custom in the South, presumably had been made after the skeleton was denuded of flesh, like the bunched burials, but (unlike the bunched burials) when the bones were still held together by ligaments. Often bones in these burials of connected skeletons were found out of place—long-bones reversed as to position, and the like—showing that the skeleton was not in the flesh when the interment was made.

In some burial sites, as will be described later, almost no bones remained.

Thirty-nine cases and boxes of skulls and other parts of human skeletons, resulting from our season's work, were sent by us as a gift to the United States National Museum at Washington. A paper descriptive of this material, kindly prepared by Dr. Aleš Hrdlička, follows this report.

A number of bones showing fractures and pathological conditions, found by us during the season's work, were presented to the Army Medical Museum at Washington. The following determinations made by Dr. D. S. Lamb, Pathologist of the institution, kindly have been sent us by Major T. T. Russell, Medical Corps, U. S. Army, Curator of the Museum.

NOTES ON HUMAN BONES EXHIBITING CERTAIN PATHOLOGICAL CONDITIONS.

OUACHITA RIVER.

Myatt's Landing, Ouachita Parish,[1] La. The left tibia; syphilitic hyperplasia.

Glendora Plantation, Ouachita Parish, La. Burials Numbers 84 and 118, two calvaria showing osteitis deformans.

Boytt's Field, Union County, Ark. The right tibia showing osteo-periostitis, possibly syphilitic.

Bell Gin Landing, Union County, Ark. The bones of the left forearm, showing simple fracture with good repair.

BOEUF RIVER.

Jones' Landing, Franklin Parish, La. The femur, tibia, fibula, and ulna, showing osteitis deformans.

Dailey Landing, Franklin Parish, La. A calvarium showing syphilitic erosions.

BAYOU BARTHOLOMEW.

Ward Place, Morehouse Parish, La. Burial No. 12, the right femur and tibia showing osteo-arthritis; and from Burial No. 18, a woman, the bones of the pelvis and thighs, showing congenital dislocation of femurs.

Bray's Landing, Morehouse Parish, La. A right tibia, showing hyperplastic osteo-periostitis, possibly syphilitic.

The pottery of the Ouachita valley which, as we have said, forms part of the lower Mississippi province, is most favorably represented by vessels from sites near the union of Bayou Bartholomew with the Ouachita river, where a center of culture seems to have existed, and where incised decoration was sometimes executed by a master hand.

In no other region, however, in which we have worked, have we obtained so great a proportion of pottery of inferior ware, of commonplace form, and of rude and carelessly executed decoration, and having such sameness of design as we found in the lower Mississippi region,[2] although we met with there, in exceptional instances,

[1] The State of Louisiana uses the term *parish* to designate that division of the commonwealth which in every other State in the Union is known as a *county*.—C. B. M.

[2] So far as inferior work and rude decoration are concerned. We exclude from this statement that class of pottery from Florida known as ceremonial, which was made expressly for interment with the dead, and, as might be expected, is of the commonest kind of ware, and has the crudest forms of decoration. This pottery is very abundant in Florida.

vessels which, in our belief, in respect to incised decoration, exceed in beauty any discovered elsewhere in the United States.

We note the occasional occurrence throughout the Ouachita valley of what is seldom found on aboriginal pottery in other regions, namely, the extensive use of incised decoration and of color on the same vessel.

We are aware that on pottery from regions to the northward, as well as from the province we are describing and from elsewhere, incised designs were sometimes reinforced by the insertion of color in the lines, but the body of the vessel, in such instances, is not colored with pigment; hence we do not include this class with the one described in advance of it.

It will be noted also by the student of pottery of the Ouachita valley that the use of pigment on large numbers of vessels did not obtain there, the use of any color on vessels having been exceptional; and in this respect the pottery of the lower Mississippi province seems to differ from that of the middle Mississippi valley, where colored pottery is so commonly and abundantly found.

Pottery with black coloring material was not found by us in the Ouachita valley; though such coloring is present occasionally on vessels in the middle Mississippi province, where, however, it has little body, being hardly more than a stain.

The use of white pigment (kaolin), except to intensify the lines of incised decoration, seems to have been infrequent in the lower Mississippi region, though it was abundantly used to the northward. But one vessel was found by us in all this season's work on which white pigment was used to confer a design, namely, a small water-bottle bearing on the body partly interlocked scrolls, alternately of red and of white pigment. This vessel, like the two of the "teapot" variety found by us, exactly resembles vessels found in abundance farther north, and all perhaps are importations.

Red pigment, when occurring on pottery of the Ouachita valley, seems to be more durable and more brilliant than that used on pottery found farther north. A mass of red pigment from the cemetery at the Keno Place has been examined by Dr. H. F. Keller, who says of it: "It is remarkably brilliant, and contains, besides oxide of iron, considerable quantities of clay and quartz fragments."

A bottle in fragments, found by us at Sycamore Landing,[1] was coated with green pigment. This pigment, analyzed by Doctor Keller, proves to "be a mixture of green silicate of iron (glauconite) and white kaolin." Masses of glauconite were found by us with burials at the great prehistoric site at Moundville, Ala.[2]

In relation to the collection of pottery made by our expedition this season, it may be well to explain that a large proportion of the earthenware vessels obtained were in fragments—one in 108 pieces—and that all such vessels are carefully cemented together. Sometimes slight restoration is deemed advisable. This retoration, however, is attempted only when the parts of the vessel in our possession make it clearly apparent what the remaining part must have been.

[1] The Keno Place and the plantation at Sycamore Landing are near together on Bayou Bartholomew, as will be described, later.

[2] See "Certain Aboriginal Remains of the Black Warrior River." Journ. Acad. Nat. Sci., Phila., Vol. XIII., pp. 201, 211.

Restoration of pottery, it may be said, is more often requisite when the ware comes from a region like the Ouachita valley, where the soil contains a large percentage of clay, than it is in the case of earthenware found in sand; inasmuch as in clay the search for fragments with the aid of a sieve is not nearly so successful as it is in sand.

All measurements of earthenware vessels herein given are approximate; and all reductions in size, not only of vessels but of other objects illustrated in this report, are linear.

Diagrams of designs are as accurate as it is possible for them to be when these designs are transferred from a curved to a flat surface.

Prof. William H. Holmes has kindly prepared for the Academy the accompanying notice of the pottery found by our expedition in the Ouachita valley.

"Although this collection of earthenware presents many features of interest and illustrates a local culture center not heretofore well represented in our collections, it does not stand apart from the general and well-known culture products of the general region. It embraces features of form and embellishment indicating close alliance with the wares of the middle Mississippi province and of the Gulf Coast, as far east as Florida; but affords no evidence of close relationship with the pottery of the Pueblo region on the West or of Mexico on the South. It bespeaks a special development highly perfected along certain lines by a local tribe or group of peoples; the best examples rise well above the general level of the ceramic products of the region, and, for that matter, much above the general run of the ware of the localities represented. A number of vases belonging to this group are illustrated in the Twentieth Annual Report of the Bureau of American Ethnology, Plates LI and LII.

"In shape many of the vessels are worthy of special note. They range from simple shallow bowls to high-necked bottles, and much skill and taste are shown in the modeling, especially of the formal shapes. In the entire series illustrated by Mr Moore, there is hardly a single one that will not give pleasure to persons of refined taste, and some may well become models for the professional potters of our factories. Complex and compound forms are not common, although the rim and neck of the vases are in many cases modeled to give the appearance of a small cup set into the mouth of the receptacle proper. Life forms are of comparatively rare occurrence, and only one example of the modeling of the human form is seen, this being a rudely constructed figure attached to the rim of a bowl (fragment). Certain specimens have the rim so shaped as to suggest the use of a lid, although no lids have been found. As a rule the base is flattened or gently rounded, and rare specimens are mounted on tripods. One of the choice specimens is a small vase (Fig. 81) surmounted by a cup-like rim piece beneath which the body widens gradually, expanding at the base into four conical projections.

"As a rule the color is the dark gray of the baked clay, a few specimens being finished in red. The surface is smoothly finished and, in cases, well polished. The paste is moderately hard and tenacious, and is tempered in cases, especially in the ruder ware, with pulverized shell.

MAP OF PART OF THE OUACHITA RIVER

Scale in miles.

0 5 10 15 20

1909

"The decoration of this ware is even more noteworthy than the forms. It consists, in the main, of incised work, the scroll motive, which takes a multitude of forms, prevailing to a remarkable extent. The treatment is refined and even elegant, and the application of the designs to the diversified forms of the vessels is masterly. This is well illustrated in Figs. 15, 81, 131. The principal band of decoration encircles the body of the vessel, often covering the entire surface. The neck, and especially the rim, of the bowl-forms is in cases occupied by a very much conventionalized and abbreviated band of the same scroll motive. Although highly conventionalized and applied to purely formal shapes, it is clear that this scroll in all its manifestations still carried with it in the mind of the initiated the animal concept, and a limited number of examples are seen in which the scroll units take the place, on animal shaped vessels, of the members of the body. The number of units employed is normally four, but this is not adhered to strictly, the repetition varying with the requirements of the vessel decorated. It is most interesting to note that, as seen in the tracings of designs shown in the illustrations, the scroll unit is repeated from three to six or more times, and that, when viewed from the under side of the vessel, the interspaces take the form of a swastika which has three or more arms according to the number of the scroll units used—the swastika figure being, however, a mere accident, and thus without significance. A noteworthy feature of these designs is the elaboration of some of the scroll work interspaces. A disk-like figure often fills the wider openings, while the narrower are occupied by incised reticulations, which we may assume are conventional suggestions of the body markings of the creature symbolized.

"This treatment of formal elements of animal origin is so universal that we are safe in assuming that, whether the actual decorator of these vessels had the life form in mind or not, the origin of each and every part of the decoration is in a life concept, and doubtless one with which superstitious notions were associated. Considering the simple and graceful forms of the vessels embellished with the scroll work, the elegance and completeness of the designs, and the skill of execution and remarkable adjustment to the vessel forms, these potters of the old-time villages among the Louisiana bayous may claim to have reached the highest mark among all the valley peoples in the esthetic treatment of earthenware."

We shall now take up the detailed account of our season's work, with the explanation that many aboriginal dwelling-sites which we carefully investigated, but in which no burials or artifacts of interest were found, are omitted from our report, and that mounds and sites are described in order, going upstream.

OUACHITA RIVER.

The Ouachita, a comparatively narrow stream, is navigable in the Winter and Spring seasons from its union with Black river to Camden, Arkansas, a distance, as we have said, of about 300 miles by water.

Much of the territory bordering the Ouachita is low-lying[1] and subject to inundation, and probably in aboriginal times, as at present, was not occupied for permanent habitation. Consequently it is but in places along the banks of the Ouachita that one can reasonably expect to find places of aboriginal abode.

Our investigation of this river ended about twenty miles above Camden, as we have stated in our introductory remarks.

MOUNDS AND SITES.

Mounds at Watson Landing, Catahoula Parish, La.
Mound on the Perrin Place, Catahoula Parish, La.
Mounds on the Taylor Place, Catahoula Parish, La.
Mounds at Pritchard Landing, Catahoula Parish, La.
Mounds on the King Place, Catahoula Parish, La.
Mound at Booth Landing, Catahoula Parish, La.
Mounds near Big Lake, Catahoula Parish, La.
Dwelling-sites near Harrelson Landing, Caldwell Parish, La.
Mound near Poplar Grove Landing, Caldwell Parish, La.
Mounds near Hogan Landing and near Wade Landing, Caldwell Parish, La.
Mound near Billy Landing, Caldwell Parish, La.
Mound and site near Cut-Off Landing, Ouachita Parish, La.
Mounds opposite Logtown Landing, Ouachita Parish, La.
Cemetery at Myatt's Landing, Ouachita Parish, La.
Mound near Pargaud Landing, Ouachita Parish, La.
Cemetery on the Glendora Plantation, Ouachita Parish, La.
Mound near Lock Number Six, Ashley County, Ark.
Mounds near Green Lake, Bradley County, Ark.
Cemetery at Caryville Landing, Union County, Ark.
Mounds near Pigeon Hill, Union County, Ark.
Cemetery in Boytt's Field, Union County, Ark.
Mounds near Purdue Wood-Camp, Calhoun County, Ark.
Cemetery at Bell Gin Landing, Union County, Ark.
Mounds near Hill Landing, Union County, Ark.
Mounds at the Boone Place, Calhoun County, Ark.
Mounds on the Keller Place, Calhoun County, Ark.
Mound and sites near Pyle's Landing, Calhoun County, Ark.
Mound and Cemetery at Kent, Ouachita County, Ark.

Mounds at Watson Landing, Catahoula Parish, La.

At Watson Landing, on property of Mr. W. J. Watson, of Jonesville, La., is a group of mounds of moderate size, the largest of which is used at the present time for burial purposes. Nothing was found at this place.

[1] From just above Ouachita City for about seventy-five miles up by water, is an almost uninhabited region.

Mound on the Perrin Place, Catahoula Parish, La.

About six miles below Harrisonburg, on the property of Mr. T. W. Perrin of that place, on the right-hand side going up, is a mound partly eaten away by the river, which was not investigated by us.

Mounds on the Taylor Place, Catahoula Parish, La.

About one mile below Harrisonburg, on property of Mr. A. G. Taylor, of Harrisonburg, is a group of mounds of moderate size, showing the effect of much cultivation. Nothing of interest was found at this place.

Mounds at Pritchard Landing.

At Pritchard Landing is an interesting group of mounds on the property of Mr. S. R. Oliphant, who resides on the place.

This group, the site of an important center in aboriginal times, is an irregular ellipse in form, but is without the great central mound so often present in large groups of this kind.

Pools of water here and there show whence material for the mounds was taken.

There are believed to be fourteen mounds at this place, most of which, however, are small and have been greatly spread by long cultivation.

Of the five principal mounds of this group, all of which are rectangular and have summit-plateaus, one is small; one seems to have been greatly dug into, presumably to serve a purpose in the Civil War, as it commands the river; and one, twenty-seven feet in height, is so very irregular in outline through wash of rain that measurements of its present dimensions would give no idea of its original size.

The largest mound, which forms part of the ellipse, much eroded by wash of rain, has corners directed toward the four cardinal points. Its height is 40 feet.[1] The present measurements of the basal diameters are, from NW. to SE., 253 feet; from NE. to SW., 236 feet.

The summit-plateau in the same directions, respectively, is 88 feet and 59 feet. In Fig. 1 is a representation of this mound, which serves to illustrate the extent to which mounds sometimes suffer through wash of rain. The picture also shows how inadequate the camera is to convey a just idea of the height of a mound; the one in question having, as we have said, an altitude of 40 feet.

In a SW. by W. direction from the principal mound is one more symmetrical than any of the others, with a height of 31 feet, measured from the north. Its diameter E. and W. is 279 feet; N. and S., 243 feet. Respectively in the same directions the summit-plateau measures 126 feet and 100 feet. The sides of the mound face the cardinal points.

[1] In our measurement of heights of mounds great care is taken to select the surrounding level as a starting point and to avoid ridges and depressions, which are often present in the neighborhood of mounds in the shape, respectively, of artificial causeways and places whence material has been taken.

As the reader is aware, a large proportion of domiciliary mounds (to which the one in question evidently belongs) are without burials, though a few have superficial burials in their summit-plateaus. The latter proved to be the case in this mound, which was the only one in the group where the soil of the summit-plateau was soft, dark, and fitted for cultivation.

A great number of trial-holes sunk by us all over the summit of this mound showed a considerable area from the central to the south-eastern part of the plateau

FIG. 1.—Principal mound. Pritchard Landing.

to be of material much darker than that of the remaining parts, and seven trial-holes in this dark soil at once exposed human remains.

An irregular area somewhat elliptical in outline, with diameters of 48 and 53 feet, which area proved to be in excess of the space containing burials, was dug throughout by us to a depth of from 1 to 2.5 feet where the dark soil came to an end.

The bones, crumbling and in fragments, were in such a condition that determination as to the method of burial was impossible, though in a few cases the burial at length was indicated. In many instances, however, bones lay scattered and in layers, remnants of long-bones lying under or alongside what was left of skulls.

In all, parts of seventy-four skulls were unearthed (eleven in one pit). The remaining bones of the skeletons were far fewer than the complement called for

by the number of crania, but from the condition of the bones which remained it is probable that many others had disappeared through decay.

Such artifacts as were found with the burials are not of a character to inspire enthusiasm in the artistic ability of those who occupied so important a center as this one must have been.

With one burial was a small arrowhead of chert; a polished "celt" 3 inches in length, which was given to Mr. Oliphant, the owner of the mounds; and several large fragments of an earthenware pipe bearing rude incised decoration.

Another burial had with it a single arrowhead of chert.

With human remains was a pipe of earthenware (having a small part missing from the rim) also with rude, incised decoration (Fig. 2).

FIG. 2.—Pipe of earthenware. Pritchard Landing. (Full size.)

Three vessels of medium size were found associated in an interesting way. Immediately over a skull was a bowl of such size as to permit it exactly to cover the cranium. On one side of this inverted bowl, and in contact with it, was a vessel of medium size, while on the other side was another vessel of similar dimensions, one part of the rim of which dipped under the inverted bowl.

With a water-bottle, found in fragments, was a bit of quartz crystal. These objects were not in the immediate neighborhood of human bones, but undoubtedly they had been associated with some that had disappeared through decay or had suffered disturbance.

Fifteen earthenware vessels came from this cemetery, nearly all being found singly, in pairs, or three together, in the neighborhood of skulls. One, however, lay at the hip of what seemed to have been an extended skeleton which had another

vessel near the skull. Several vessels lay apart from bones, but these, no doubt, originally had been associated with them.

With one exception all vessels were broken when found, some being little more than crumbling fragments.

The ware, which is not shell-tempered, is soft and probably insufficiently fired. Decoration, when present, shows little originality, being represented by rude combinations of lines or the ever-recurring scroll. We show one vessel from this place.

Fig. 3.—Vessel No. 16. Pritchard Landing. (Height 3.6 inches.)

Vessel No. 16. A cup of somewhat unusual form, having a flat base and a commonplace line and punctate decoration (Fig. 3).

Though considerable prospecting was done by us in the other mounds and in the level ground at Pritchard Landing, no human bones were found and no artifacts, with the exception of several arrowpoints of chert.

At this place no history is preserved of the finding of human remains through years of cultivation or in the digging of numerous post-holes for fences.

A son of Mr. Oliphant described the discovery by himself, while hoeing, of a frog of stone, of life-like appearance, having in its back a circular hole of considerable size, doubtless a pipe.

Scattered over the level ground in places are numerous fragments of pottery and of stone, evidences of aboriginal occupancy, and we are unable to account for our inability to find aboriginal cemeteries at this place, unless it is that all trace of them disappeared through long cultivation of the ground, at a period anterior to our visit.

Mounds on the King Place, Catahoula Parish, La.

At the junction of Rawson and Gaster creeks, about 1.5 mile from Pritchard Landing, are a number of low mounds on the property of Mr. G. F. King, who resides on the place, which have been plowed over for a considerable time. No history of any discovery on this place has been preserved, and our digging had negative result.

Mound at Booth Landing, Catahoula Parish, La.

On property belonging to Mr. M. E. Booth, who lives nearby, is a mound 12 feet 4 inches in height and 74 feet across the base. Its shape is a truncated cone, and the material from which it is made is tenacious alluvial deposit, necessitating the use of a pick for removal.

As the mound is a refuge for stock in times of high water, it was not deemed advisable to destroy it, especially as two pecan trees on its summit were valued by the owner.

Owing to the presence of these trees our investigation was restricted to a pit 11 feet by 6 feet, carried down, with almost perpendicular walls, from the summit-plateau to a depth of 12 feet 6 inches, where undisturbed ground seemed to be reached. On this basal part were fragments of river shells and a number of scales belonging to a fish of the gar family.

Human remains were encountered at five levels, respectively 3 feet 6 inches; 4 feet 9 inches; 5 feet 7 inches; 6 feet; 7 feet 5 inches.

The bones were mere moldering fragments, and skulls, eight in number, were identified in seven cases by traces of teeth alone. In the other instance a mastoid process and part of a lower jaw were distinguishable.

No artifacts lay with the remains.

A few arrow- and lancepoints, of chert, and one of quartzite were scattered in the clay, as were several hones of sandstone and a stopper-shaped pebble which may have been utilized by the aborigines.

A few feet from this mound is a small area composed of black soil and fragments of mussel-shells, in which we found the base of a vessel, with nine feet encircling the margin (Fig. 4).

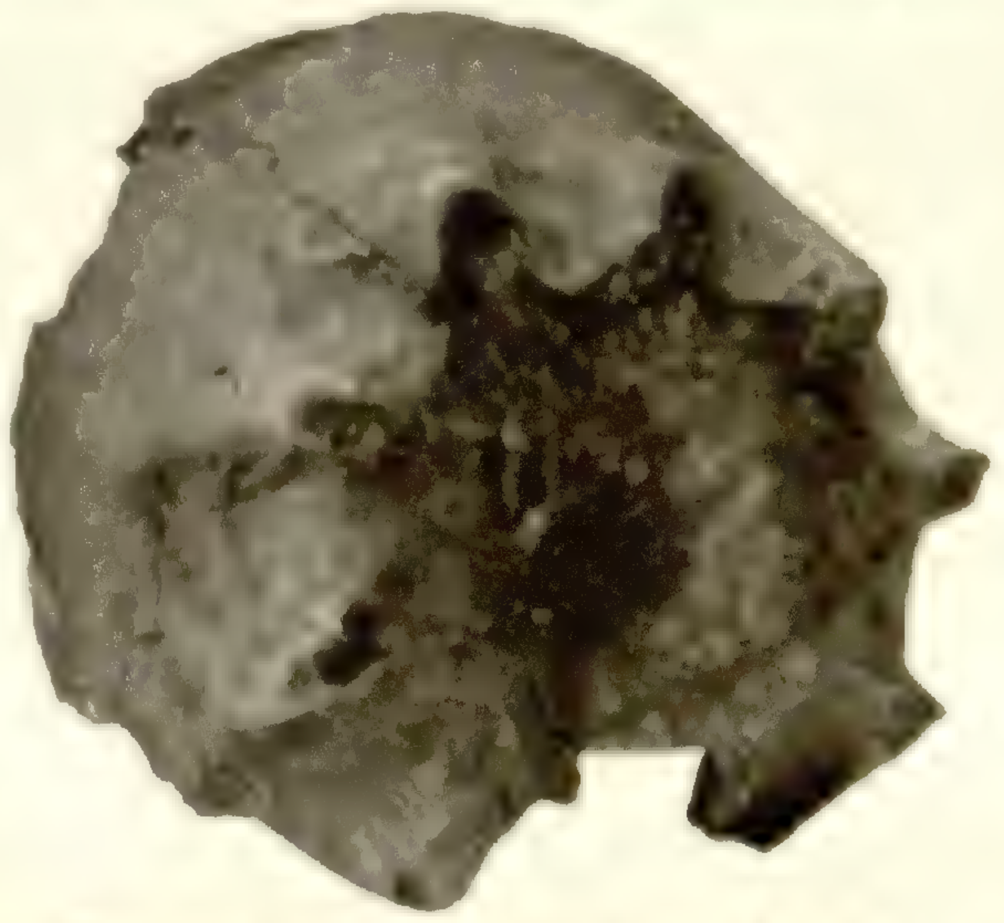

Fig. 4.—Base of vessel. Booth Landing. (Diam. 5.3 inches.)

Mounds near Big Lake, Catahoula Parish, La.

Big Lake, a small sheet of water, and not part of a former course of the river (which sometimes in the South is called a "lake"), is about one mile eastward from Pippin's Landing, on property of Messrs. H. and C. Newman, of New Orleans.

Southwest of the western end of the lake are a number of mounds, some small and some of moderate size. Some are rectangular in outline, and all are flat-topped and evidently domiciliary. A number had been dug into previous to our visit.

These mounds were all investigated by us to some extent, trial-holes being sunk with a view of determining if cemeteries were present in the summit-plateaus. Nothing was found, the clay material of which the mounds were made being compact and of a raw yellow appearance, with no admixture of the organic matter which one expects where burials have taken place.

Dwelling-sites near Harrelson Landing, Caldwell Parish, La.

In a field, the property of Mr. C. M. Harrelson, at Harrelson Landing, who resides on the place, are three circular rises in the ground, which evidently had been used as dwelling-sites in aboriginal times.

One of these (A), about 45 feet in diameter, had, through long cultivation, been plowed almost to the level of the surrounding ground. Bits of pottery and a

few fragments of human bones lay on the surface. Careful investigation of this site yielded part of one badly decayed human skeleton, and a skeleton kindly identified by Prof. F. A. Lucas as having belonged to an Indian dog.

Another rise in the ground (B), 63 feet in diameter, was somewhat higher than the one just described. Scattered over its surface in profusion were potsherds and fragments of human bones.

Human remains were encountered by us in nineteen places in this site, but their condition was unsatisfactory, owing to the state of decay in which most of them were, and to the great amount of disturbance, aboriginal and recent, to which they had been subjected. Many burials were just below the surface, and the deepest was but 30 inches down. Several skulls and some other bones were in a condition to save, however.

One burial was a skeleton lying flexed on the left side; five were at full length on the back, two being without skulls; thirteen burials had been disturbed.

No artifacts were present with the dead with the exception of one arrowhead of chert, which lay beneath a femur.

A few arrowheads and lanceheads, of chert, and a drill of the same material lay apart from human remains, as did a piercing implement of bone having the articular part of the bone remaining.

The third elevation (C) evidently had not been used for burial purposes, as a thorough search was unsuccessful.

Mound near Poplar Grove Landing, Caldwell Parish, La.

About one mile east from Poplar Grove Landing, in sight from the road, on property belonging to Mr. Frantz E. Stewart, who lives near the landing, is a mound in the form of a truncated cone, 12 feet in height and 69 feet across the base. As this mound has been used for burial purposes in recent times, a careful investigation was not attempted.

Mounds near Hogan Landing and near Wade Landing, Caldwell Parish, La.

Mounds at Hogan Landing and at Wade Landing, being in use as cemeteries at the present time, were not available for investigation.

Mound near Billy Landing, Caldwell Parish, La.

On the river bank at Billy Landing, on property of Mr. Philip Barnes, is a small part of a mound, the other part of which, we were informed, had recently fallen into the river. Embedded in the exposed section of the mound there still remained at the time of our visit fragments of a medium sized vessel of earthenware.

Considerable digging in an adjoining field, on the surface of which were a few fragments of pottery and of chert, was without reward.

Mound and site near Cut-Off Landing, Ouachita Parish, La.

At Cut-Off Landing, on property of Mr. Gilbert Stewart (who lives at Gilbert Stewart Landing, about five miles above, by water), on high ground above the landing and about 200 yards NNW. from it, is a mound about 5.5 feet high, with a basal diameter of 52 feet. This mound, which is of clayey sand, previous to our coming had been trenched in to the center on the southern side and the immediate middle portion had been dug out.

Eleven trial-holes sunk into the mound by us were without result.

A few yards easterly from this mound is an aboriginal dwelling-site, fairly littered with debris left by its former occupants. This site, under cultivation in recent times, but fallow at the time of our visit, had rich black soil, due to protracted occupancy. At one place on the surface lay part of a skull and other human bones.

This place, unfortunately, like so many investigated by us in this region, proved to have been too long under cultivation to have preserved the artifacts and aboriginal burials which undoubtedly at one time it had held. Trial-holes sunk in every portion of the field showed the surface soil left by aboriginal occupancy to have been so washed by rain after cultivation that but little of it was left above the undisturbed clay.

Fig. 5.—Arrowhead or knife, of chert. Cut-Off Landing (Full size.)

There were gathered from the surface by us: a drill of chert; several knives and small arrowheads of the same material; and an interesting arrowhead or knife, also of chert, shown in Fig. 5.

Prof. W. K. Moorehead informs us that the type last mentioned is rare, a few specimens having been found in Tennessee, Arkansas, and Louisiana, and that similar forms in obsidian from California and from Oregon are in his possession.

An almost exactly similar implement was found by us on the surface of a dwelling-site at Ragland Landing, a few miles below where the first implement was found. The second specimen, however, has a rounded edge as if it had served as a knife.

Also we were shown on a site on Little river, by a man who was camping there, a handsome arrowhead or knife of the type in question, of red chert, and much larger than the specimen found by us.

Mounds opposite Logtown Landing, Ouachita Parish, La.

Immediately across the river from Logtown Landing is a cultivated field in which are traces of several small mounds and part of a mound with flat top, probably originally 7 or 8 feet in height, which has been in part under cultivation and has been largely washed away by rain.

In the surrounding field are remains of dwelling-sites, the dark soil of which has been plowed and washed away until undisturbed clay is apparent in places.

As it became evident that time would be spent in negotiations with the owner of this place for even the small amount of investigation we had planned to devote to it, we passed on to more inviting fields of research.

Cemetery at Myatt's Landing, Ouachita Parish, La.

At Myatt's Landing, about 15 miles by water below the city of Monroe, is the plantation of Capt. A. Myatt, who resides upon it. On the left of the road leading inland from the landing, is a large cotton field. At the extreme northern corner of this field, adjoining the road, is a restricted area of soil darkened by admixture of organic matter, extending variously from .5 foot to 2.5 feet below the surface, on which were fragments of musselshells, pebbles, and other debris from aboriginal occupancy.

We were informed by Captain Myatt that in work connected with the plantation, and later by the digging of several individuals who visited the place, skeletons, about ten in number, had been unearthed, and that with these skeletons a few earthenware vessels had been found.

This area covered by debris is one of the highest parts of the plantation, and is reached by the river only at periods of exceptionally high water.

The dwelling-site apparently extends across the road (which has cut through it to undisturbed clay) and continues in a northwesterly direction, on which part is the residence of Captain Myatt.

Consequently our investigation was limited to that part of the site lying within the field. A most thorough search of this portion was made by us with the aid of trenches and trial-holes; this and the subsequent work occupying two days and a half with our force of diggers, which, as we have said, consisted of eleven men, and four to supervise.

It was clearly determined that but a small part of the dwelling-site included within the field (that which bordered the fence) had been used as a cemetery, and this part was completely dug through by us.

Thirty-eight burials were encountered in addition to many bones scattered by disturbance in aboriginal times and through the agency of the plow at a later period. It was as a rule easy to determine to which class these disturbances belonged; those arising through cultivation of the soil being more fragmentary and nearer the surface than were the aboriginal disturbances.

No graves were at a depth greater than 2.5 feet.

The form of burial which was determined by us in but seven instances was at full length on the back, with the lower limbs crossed in one case. A number of other burials evidently had been at full length also, judging from undisturbed parts of the skeleton that remained.

There was no fixed orientation, the skulls being directed toward various points of the compass.

A number of skulls and other skeletal parts from this place were saved in fairly good condition, and were sent to the United States National Museum.

In a small pit in this cemetery, in which no bones were found, were a number of musselshells, the best preserved of which proved to be: *Lampsilis hydianus; L. purpuratus; L. ventricosus satur; L. anodontoides; Quadrula heros dombeyana; Q. perplicata.*

The yield of artifacts from this cemetery was meager.

Near a burial was part of a bone pin, which probably was only midden debris.

With a burial in one instance, and apart from bones in another case, were two objects of shell, each about 1.5 inch in length, cylindrical, having a head about .75 of an inch in diameter, which is somewhat in excess of the remainder of the object—probably ear-plugs of a well-known type.

FIG. 6.—Vessel No. 15. Myatt's Landing. (Height 5.8 inches.)

With the burials were seventeen vessels of earthenware, each found singly near a skull, where the original position could be determined, which it was possible to do in almost every case.

In addition to these vessels, many of which were broken or fell apart on removal, were fragments of vessels, which were probably parts of mortuary deposits that had been scattered by the plow or through disturbance in aboriginal times.

The vessels from this cemetery are of moderate size. Much of the ware is inferior. Shell-tempering is present in some instances. In form the vessels in the main partake of the character of pots. The water-bottle is represented in several instances, and one life-form is among the vessels found.

Few of the vessels are without ornamentation. The decoration, when present —trailed, incised, or punctate markings, as the case may be—is often rude. Red pigment is present in one case, within incised lines.

The following vessels are deemed worthy of special description :

Vessel No. 15. This bottle (Fig. 6), of brown ware, with incised and punctate decoration, rudely executed, is interesting in one particular in that the entire neck is decorated exteriorly, any decoration on necks of long-necked bottles being unusual, except in the case of such vessels from regions to the northward, on the necks of which pigment has been used.

FIG. 7.—Vessel No. 11. Myatt's Landing. (Diam. 8.2 inches.)

Vessel No. 11. This vessel, an attempt at a life-form, presumably represents a bird, the wings possibly being indicated by faint incised markings which hardly appear in the illustration (Fig. 7). That the aborigines at this place were hardly

adepts in the plastic art is evidenced by the fact that in place of a modeled bird's head we find a mere knob with attempts at line decoration upon it.

There are two holes for suspension at opposite ends of the opening.

Farther up the Ouachita, in the cemetery in Boytt's Field, we found somewhat of an improvement on this style of vessel, though in that case also no modeling on the head has been attempted.

In another field, westwardly from the house, is a shell deposit near the bank of a bayou which joins the Ouachita river at Myatt's Landing. In this deposit we found shells as follows: *Quadrula heros dombeyana*; *Q. trapezoides*; *Q. perplicata*; *Q. trigona*; *Q. pyramidata*; *Q. asper*; *Plagiola securis.*

All these species inhabit the lower Mississippi and its tributaries, and with one exception the shells found seem entirely similar to those of the living shell fish. *Q. pyramidata* is about two-thirds the ordinary size, though evidently adult. This probably has no special significance, according to Doctor Pilsbry, who has seen similar dwarf colonies of other species, probably due to local conditions unfavorable to them.

Near the shell deposit, on the surface, are many signs of aboriginal occupancy, and the soil is blackened to a considerable depth. Numerous trial-holes yielded no human remains.

There were gathered from the surface: two disks of ferruginous sandstone, each with a concavity on either side; a small "celt" which was given to the owner of the plantation; a chisel wrought from a chert pebble; knives and arrowheads of chert; part of an object of bone, probably originally intended for a bead, but which had split in the boring. Prof. F. A. Lucas believes this bone to be from the leg of a deer.

Mound near Pargaud Landing, Ouachita Parish, La.

This mound, on the Pargaud Plantation, is the property of Mr. John T. Cole, to whom belongs also the Glendora Plantation, which figures so largely in this report.

The mound, evidently domiciliary, has suffered through wash of rain. It was not dug into by us.

Cemetery on the Glendora Plantation, Ouachita Parish, La.

The Glendora Plantation, about sixteen miles above Monroe, by water, is the property of Mr. John T. Cole, who, as we have said, lives on another plantation belonging to him, which is somewhat nearer Monroe. The Academy is greatly indebted to Mr. Cole for the privilege of investigating the rich cemetery on his place.

Immediately at the landing is a cotton-gin, and almost directly back of this gin was an aboriginal cemetery in ground long under cultivation, believed to be beyond reach of the river.

This ground, planted in oats at the time of our visit, gave no superficial indication of what lay beneath, and was hardly perceptibly above the surrounding level. Its history, however, was widespread, it being generally known that years before, a member of Mr. Cole's family had made a small collection of earthenware vessels from the place which had been brought to his notice through discoveries made by employees while digging post-holes.

Trial-holes sunk by us where the relics had been found came immediately upon traces of human remains and vessels of earthenware. Guided by the results obtained in the holes, a rectangular area 54 feet long by 51 feet wide, the longer dimension running E. and W., was entirely dug through by us, largely with the use of trowels, especially where grave-pits were encountered, the deepest of which extended 38 inches below the surface.

The space dug through, consisting of sandy clay, contained burials in considerable numbers, with the exception of the final seven feet of the eastern end. Subsequently, digging in irregular spaces, amounting to 847 square feet, was done contiguous to the N., S. and W. parts of the area already dug (making the total digging somewhat less than one-tenth of an acre), in order to determine if burials extended beyond.

While some burials were encountered in this latter digging, they were much less numerous in proportion to the space covered than were those in the portion first dug, and it was evident, when our digging was discontinued, that we had reached a tract in which burials were widely apart.

As we have said, the deepest grave-pit found by us had a depth of 38 inches. There were many of almost equal depth. Some were comparatively small and circular, indicating the bunched burial; others, by their shape, showed that the extended form of burial had been employed.

Human remains were encountered at 121 places in the cemetery, and, as a rule, consisted of hardly more than traces of bones—sometimes crowns of teeth only, which were crumbling into dust.

It is impossible to form an estimate of the number of individuals who had been interred, since not only were the remains decayed as we have described, but there had been great aboriginal disturbance in the cemetery, caused by interments cutting through others previously made; and these disturbances had created sad havoc among bones and pottery.

In this cemetery little of interest had been placed with the dead, with the exception of vessels of earthenware. Glass beads were found at six points and ornaments of sheet-brass eighteen times, in connection with human remains.

In some instances the alloyed metal was corroded through and through, traces only remaining; in others, however, the brass was better preserved and was found in the form of small cones; disks of various diameters; tubular beads; wide, annular ornaments which possibly had been worn on the fingers.

We shall now give in detail a description of all objects found with human remains in this cemetery, excepting, however, glass, brass, and vessels of earthen-

ware, unless objects belonging to these classes were found associated with other objects.

Vessels of earthenware, later, will be assigned a place to themselves.

Burial No. 8, only teeth, had with it a brass disk 5.75 inches in diameter, which fell to bits on removal; three fragments of chert; and a large bead, fashioned from a conch (*Fulgur*) by drilling a hole through a part of the shell including a portion of the shoulder, and leaving attached on each side, great wings consisting of portions of the bodywhorl of the shell.

Since visiting the cemetery at Old River Landing on the Arkansas river,[1] we have obtained from that place ten beads exactly similar in type to the one just described, which were found with three others, it is said, with a burial in digging in the garden of the principal dwelling on the place. As these beads are in better condition than the one from Glendora, we show one of them in Fig. 8. Its maximum diameter is 2.25 inches.

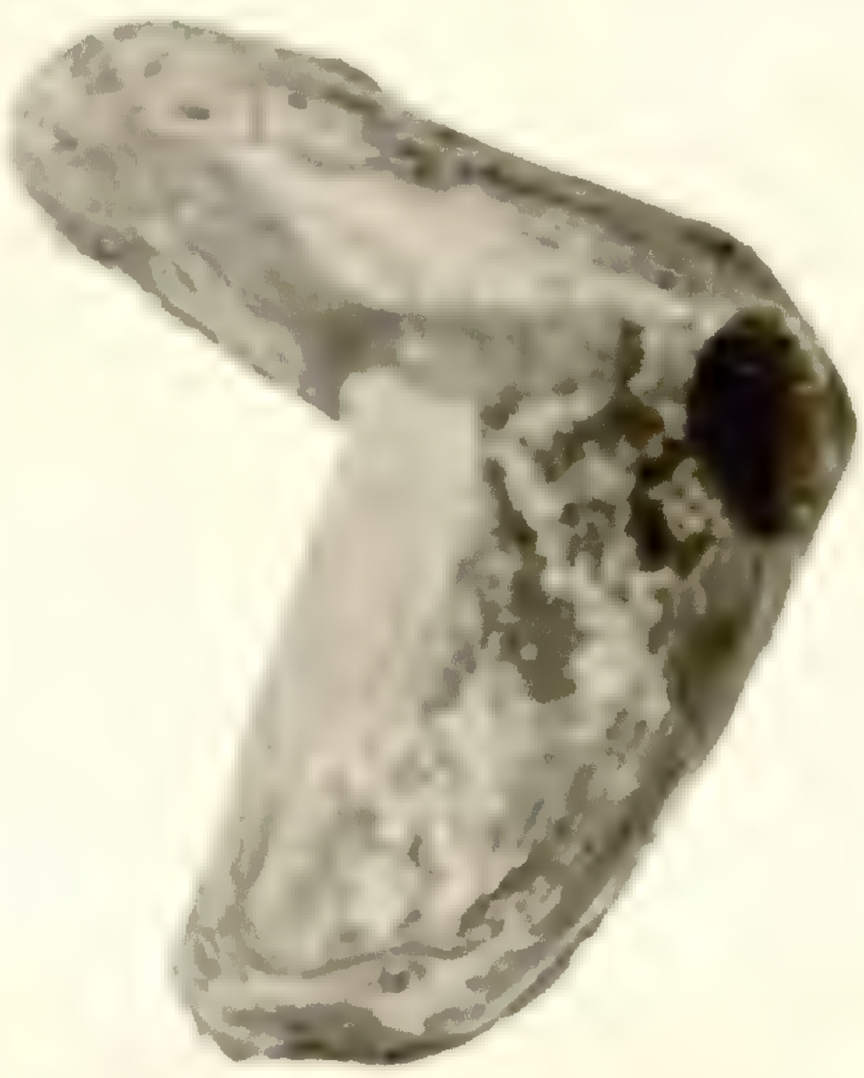

Fig. 8.—Shell bead from Arkansas. (Full size.)

Burial No. 19, traces of teeth, had associated with it a discoidal stone of limonite partly coated with hematite, 2.8 inches in diameter; a knife of chert, 2.7 inches in length; two earthenware vessels.

Burial No. 25, remains of a skull, had near it a pebble of chert and three vessels of earthenware.

Burial No. 26, traces of teeth, had nearby: glass beads; two earthenware vessels, one of which was turned over a discoidal stone, while another one lay outside the vessel. These discoidals, one of a hard, fine-grained stone, the other an impure quartz were, respectively, 1.8 inch and 2.7 inches in diameter.

Burial No. 36, fragments of a skull, was associated with a single pebble of chert.

Burial No. 42, a skull in fragments, had nearby a number of small, round pebbles which, presumably, had belonged to a rattle.

Burial No. 58, mere outlines of a skull, had as a mortuary deposit, one flake of chert and two coarsely-made arrowpoints of the same material.

Burial No. 75, small fragments of bones, was accompanied by glass beads; traces of sheet-brass; two chert pebbles; two vessels of earthenware.

Burial No. 77 had, in association, a chert pebble and two vessels of earthenware, under one of which was another chert pebble showing wear.

Burial No. 84, the outline of a skull and fragments of bones so placed that a bunched burial was indicated, had a brass disk 2.5 inches in diameter; another with a diameter of 7.75 inches; a large shell bead; two implements of iron or of steel, badly rusted, each about 9 inches in length, resembling slender lancepoints.

Burial No. 88, bits of bone, had a discoidal, seemingly of fine-grained sandstone, 2.6 inches in diameter.

[1] See our "Certain Mounds of Arkansas and of Mississippi," p. 511.

Burial No. 93, remnants of a skull and of other bones of a child, had placed near it four earthenware vessels; two chert pebbles; the remnants of an ear-plug made of shell and wood; and a discoidal of quartz, with a diameter of 2.8 inches.

Burial No. 95, fragments of the skull of a child, was accompanied by shell beads; traces of sheet-brass; a small earthenware bottle.

Burial No. 105, fragments of bone, had an undecorated tobacco-pipe of ordinary pattern, the only pipe met with in the cemetery.

Burial No. 109, fragments of bones, lay with three small cones of sheet-brass, two vessels of earthenware, and a discoidal of fine-grained sandstone, 3.4 inches in diameter.

Apart from human remains, but undoubtedly having been with them originally were: chert pebbles in several instances; fragments of brass; red pigment (oxide of iron); a lancehead of black chert, slightly less than 4 inches in length, with the shank missing; a double-pointed weapon of chert, 7.75 inches in length; two discoidal stones each found with a vessel of earthenware. One of these discoidals, of quartz, is 2.6 inches in diameter; the other, with a diameter of 2.9 inches, is of limonite beautifully coated with a natural deposit of hematite, similar to others we have found previously and like the one described by General Thruston.[1]

Three hundred and twenty-two vessels of earthenware, nearly all badly broken, were found in the cemetery on the Glendora Plantation. Many of these were in disintegrating fragments which indicated, nevertheless, the deposit of entire vessels by the aborigines.

As in aboriginal life vessels of inferior ware and of comparatively crude decoration no doubt predominated, so vessels of this class might be expected to be in the majority in deposits made with the dead; and so it proved to be in the Glendora cemetery.

Nevertheless, from this cemetery came some of the most beautiful vessels it has been our good fortune to obtain in our years of search.

A veritable passion to decorate seems to have possessed the pottery makers of Glendora, the entire bodies and even the bases of vessels from there sometimes bearing decoration. This ornamentation, usually incised, though often faint and rather coarsely done, is sometimes of great beauty both in design and in execution, though, unfortunately, the constant recurrence of the scroll leads us to attribute a lack of originality to the native artist.

Certain of the vessels from this place, mainly bowls, are of thin and finely tempered ware, some brown, some black, often highly polished. There are also among the vessels a few specimens of ware coated with red pigment and, in addition, covered with incised decoration.

Shell tempering, though present at Glendora, is not found in its earthenware of highest grade.

The vessels from this cemetery seem to have been placed in the neighborhood of the head of the dead, as nearly all those found with human remains (many were

[1] "Antiquities of Tennessee," 1897, p. 272.

found apart from bones presumably on account of aboriginal disturbance or because burials had entirely disappeared) lay near remnants of teeth or fragments of skull, sometimes on one side of the skull only, occasionally on both sides of it.

On no occasion were more than five vessels positively determined to have been placed with one burial, though in a single instance it seemed as if two deposits of three vessels each accompanied the same skull; but it is possible that one of these groups (which was somewhat separated from the other) had been placed with skeletal remains that had entirely disappeared.

The method of arrangement of the earthenware vessels in the Glendora cemetery which was unusually diverse, was as follows:

A single vessel resting on its base.

Two vessels standing upright.

A single inverted bowl.

An upright vessel and an inverted one, together.

Three vessels standing; two upright, one inverted.

A vessel resting on its base and another on its side.

Two upright vessels and one on its side.

One upright vessel and two resting on their sides.

An upright vessel covered by a large fragment.

An upright vessel with a vessel inverted over it, sometimes fitting closely.

Two upright vessels, over one of which was a third vessel inverted.

Three upright vessels, one having a vessel inverted upon it.

An erect vessel with another turned over it; with these, a vessel on its side.

An erect vessel and one on its side, each covered by an inverted vessel.

Two upright vessels, over one of which was a third vessel inverted, a fourth vessel inverted completing the group.

Three upright vessels, one of them having a vessel turned over it, a fifth vessel inverted completing the group.

A large vessel turned over three small ones standing erect.

Two vessels standing erect, one covered by part of a large conch-shell (*Fulgur*).

Two upright vessels, one having a third vessel placed upright upon it.

An upright vessel on top of another also upright, an inverted vessel alongside.

Two upright vessels, one containing another also erect.

Two vessels standing erect, within one of them a vessel inverted.

A vessel standing upright within another one which, in its turn, was placed on a vessel standing on its base.

One vessel was inverted over a discoidal stone.

In fifteen vessels were single musselshells in fragments, doubtless having served as spoons.

We append a description of the more noteworthy vessels from this exceptionally interesting cemetery.

Vessel No. 132. An effigy-bowl of yellow ware, coated exteriorly with red pigment of a character much superior to that found in the middle Mississippi region.

though the use of pigment is so extensive there. The tail and the head project from opposite sides. The nostrils, ears, and eyes, and probably the mouth, have been accentuated with white pigment, though the eyes alone still clearly show the material (Plate I). The four legs, one of which (a hind leg) is missing, have been modeled in relief.

In addition to the decoration with pigment, the vessel is completely covered as to the body with beautifully incised scroll-work, the field being irregular disks and evenly made reticulated lines. There are four holes for suspension on opposite sides of the vessel below the head and tail. We believe this vessel to be unique.

We shall now show a series of gracefully shaped bottles from Glendora cemetery, all of excellent brown, or of polished black ware; some flat, some rounded, as to the bases.

FIG. 9.—Vessel No. 30. Glendora. (Height 4.4 inches.)

The necks, which are short, exhibit a peculiar swelling representing a cup placed upon the body of the bottle—a compound form.

Professor Holmes says[1]: "Compound forms are not unusual and consist generally of imitations of two vessels, the one superimposed upon or set in the mouth of another. * * *

[1] Fourth Ann. Rep. Bur. Am. Ethn., p. 417.

ANTIQUITIES OF THE OUACHITA VALLEY.
GLENDORA, VESSEL NO. 132. (FULL SIZE.)

COCKAYNE, BOSTON.

ANTIQUITIES OF THE OUACHITA VALLEY.
GLENDORA, VESSEL NO. 107. (HEIGHT, 8.25 INCHES.)

COCKAYNE, BOSTON.

"Other specimens may be seen in which there is only a gentle swelling of the neck, but all gradations occur between this condition and that in which forms of two vessels distinctly appear."

We may explain here that several of the vessels figured in this class by us have possessed, in the past, necks of the variety under description, but these necks having been broken in part in aboriginal times, have been carefully smoothed and evened off to enable the vessel to be continued in use.

The decoration on these bottles of compound form from Glendora is usually a combination of the scroll and other minor figures, trailed in some instances, incised in others, in a manner superior to anything of the kind hitherto met with outside the lower Mississippi region.

FIG. 10.—Vessel No. 157. Glendora. (Height 7.75 inches.)

This set of bottles is shown in Figs. 9 to 26, inclusive.

Vessel No. 107. This superb bottle, shown in Plate II, is of the same type as the bottles just described, but has, in addition, an exterior coating of red pigment of superior quality, through which is incised a beautiful combination of disks and running scrolls in a field of parallel lines which seem to lend emphasis to the decoration. In all probability the lines of the incised decoration on this bottle have been accentuated with white pigment, but if such was the case, no trace of the coloring material remains.

FIG. 11.—Vessel No. 187. Glendora. (Diam. 4.8 inches.)

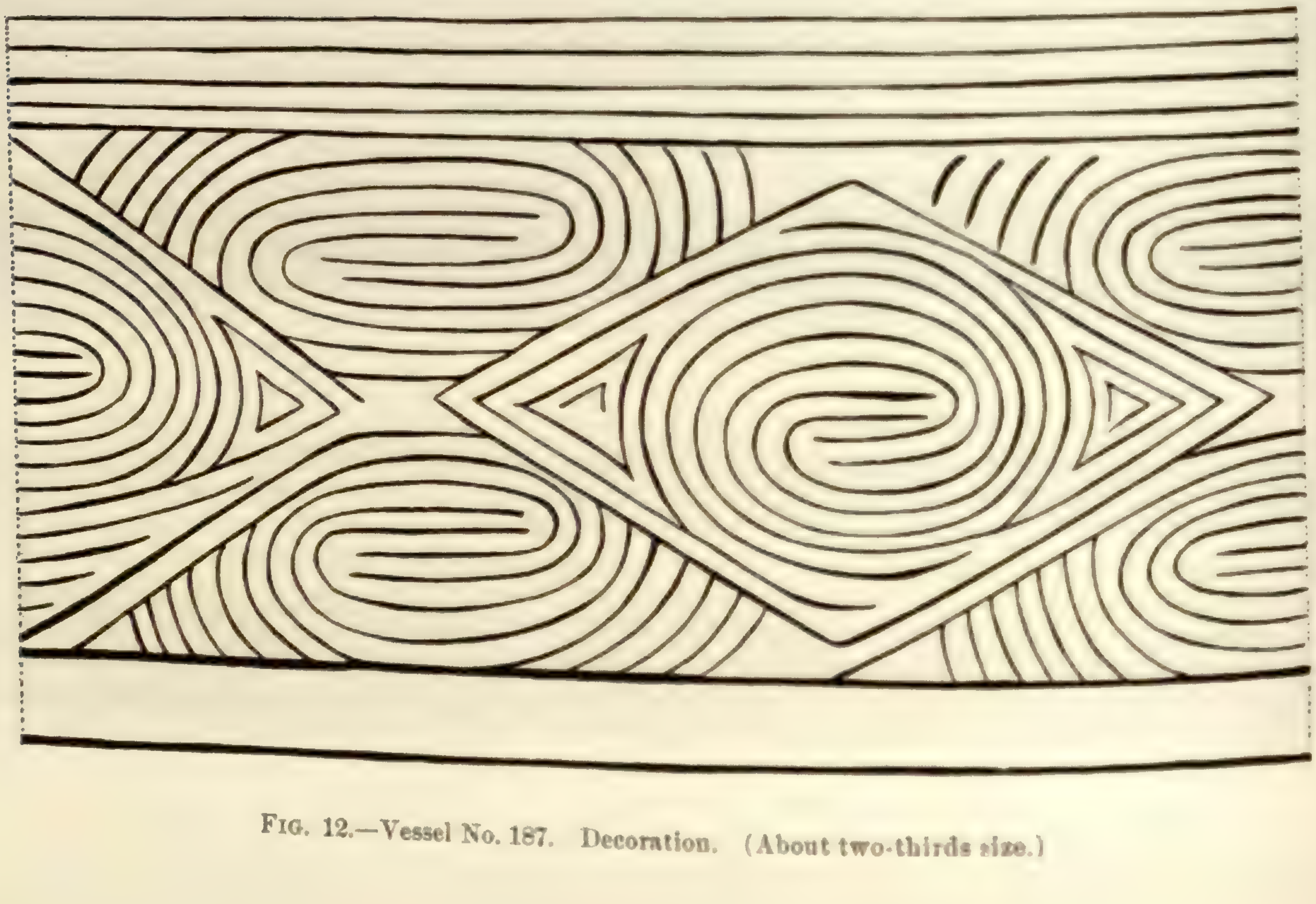

FIG. 12.—Vessel No. 187. Decoration. (About two-thirds size.)

FIG. 13.—Vessel No. 148. Glendora. (Height 7.4 inches.)

FIG. 14.—Vessel No. 66. Glendora. (Height 7.3 inches.)

FIG. 15.—Vessel No. 264. Glendora. (Height 7.8 inches.)

FIG. 16.—Vessel No. 150. Glendora. (Height 8.5 inches.)

FIG. 17.—Vessel No. 1. Glendora. (Diam. 5.7 inches.)

FIG. 18.—Vessel No. 276. Glendora. (Diam. 7.3 inches.)

FIG. 19.—Vessel No. 190. Glendora. (Diam. 6.2 inches.)

FIG. 20.—Vessel No. 255. Glendora. (Height 4.8 inches.)

FIG. 21.—Vessel No. 225. Glendora. (Height 6.5 inches.)

Fig. 22.—Vessel No. 207. Glendora. (Diam. 6.6 inches.)

FIG. 23.—Vessel No. 172. Glendora. (Height 7.8 inches.)

FIG. 24.—Vessel No. 51. Glendora. (Diam. 7.1 inches.)

FIG. 25.—Vessel No. 113. Glendora. (Diam. 6.3 inches.)

FIG. 26.—Vessel No. 154. Glendora. (Height 6.75 inches.)

We shall now refer to some of the bowls from Glendora, most of which are of polished black or of brown ware and nearly all of which bear as decoration incised designs made up mainly of combinations of the scroll or of kindred patterns in connection with minor devices. Occasionally these designs exhibit beautiful types of the swastika. The scrolls at times show notched effects which may refer back to the attributes of the plumed serpent,[1] though eventually, no doubt, the scroll came to be used in relation to all animal forms.

In some instances the incised decoration on these bowls has been emphasized with red pigment, and sometimes with white coloring material, while occasionally we find red pigment in the lines of the upper part of the decoration and white pigment in those of the lower part.

It is interesting to note that a bowl of the class under description, and with red and white pigment in its lines, was found by us a year before, in the mound at Douglas on the lower Arkansas river.

A selection of fifteen of these bowls from the cemetery at Glendora, and their decoration, shown in diagram in all cases but two, where it was not deemed necessary to include it, appear in Figs. 27 to 54, inclusive.

[1] C. B. Moore, "Moundville Revisited," Journ. Acad. Nat. Sci. Phila., Vol. XIII, pp. 372–382, inclusive.

Fig. 27.—Vessel No. 164. Glendora. (Diam. 5.2 inches.)

Fig. 28.—Vessel No. 65. Glendora. (Diam. 5.5 inches.)

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Fig. 29.—Vessel No. 21. Glendora. (Length 6.5 inches.)

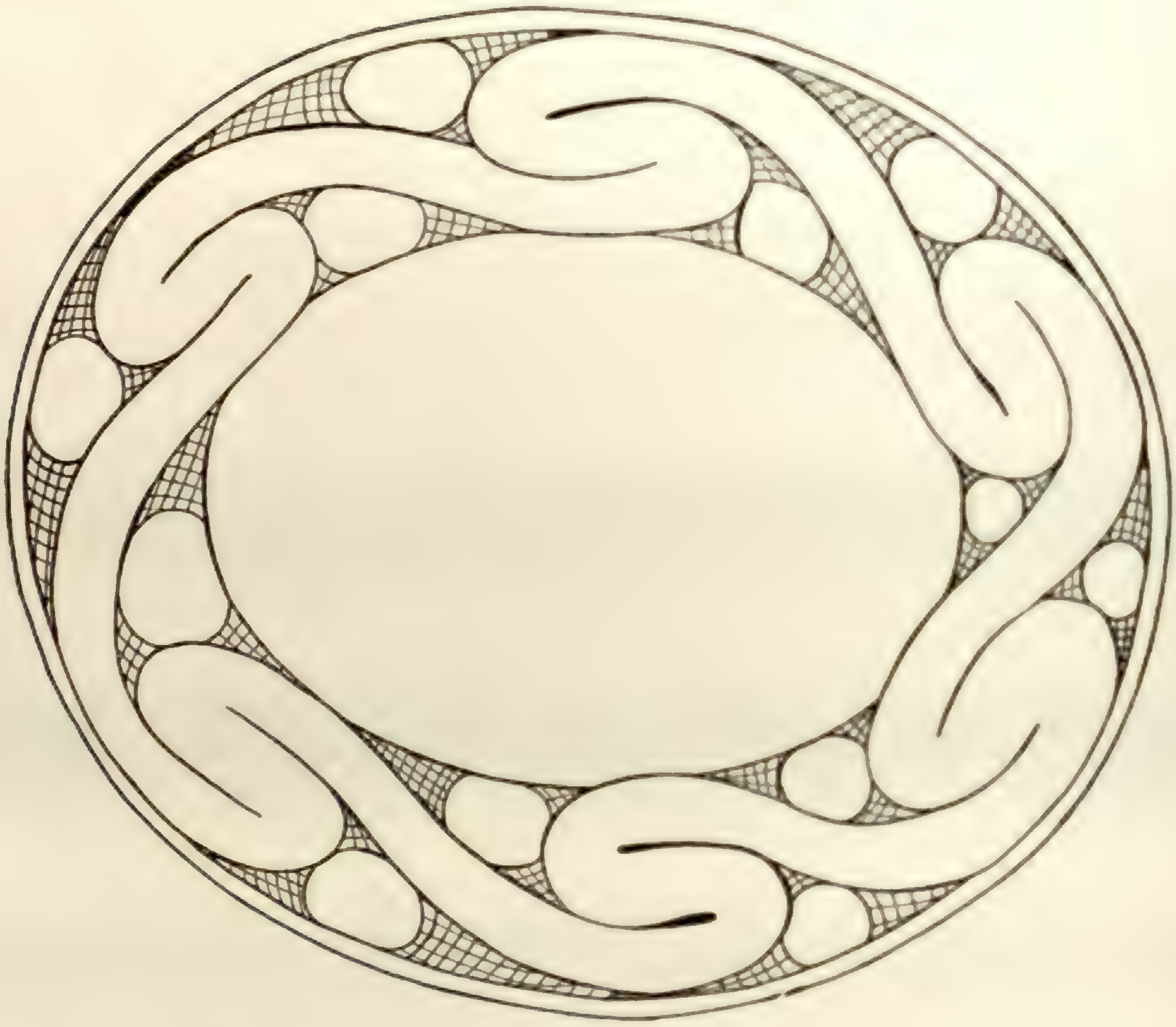


Fig. 30.—Vessel No. 21. Decoration. (About half size.)

FIG. 31.—Vessel No. 247. Glendora. (Diam. 6.75 inches.)

FIG. 32.—Vessel No. 247. Decoration. (About half size.)

FIG. 33.—Vessel No. 71. Glendora. (Diam. 6.2 inches.)

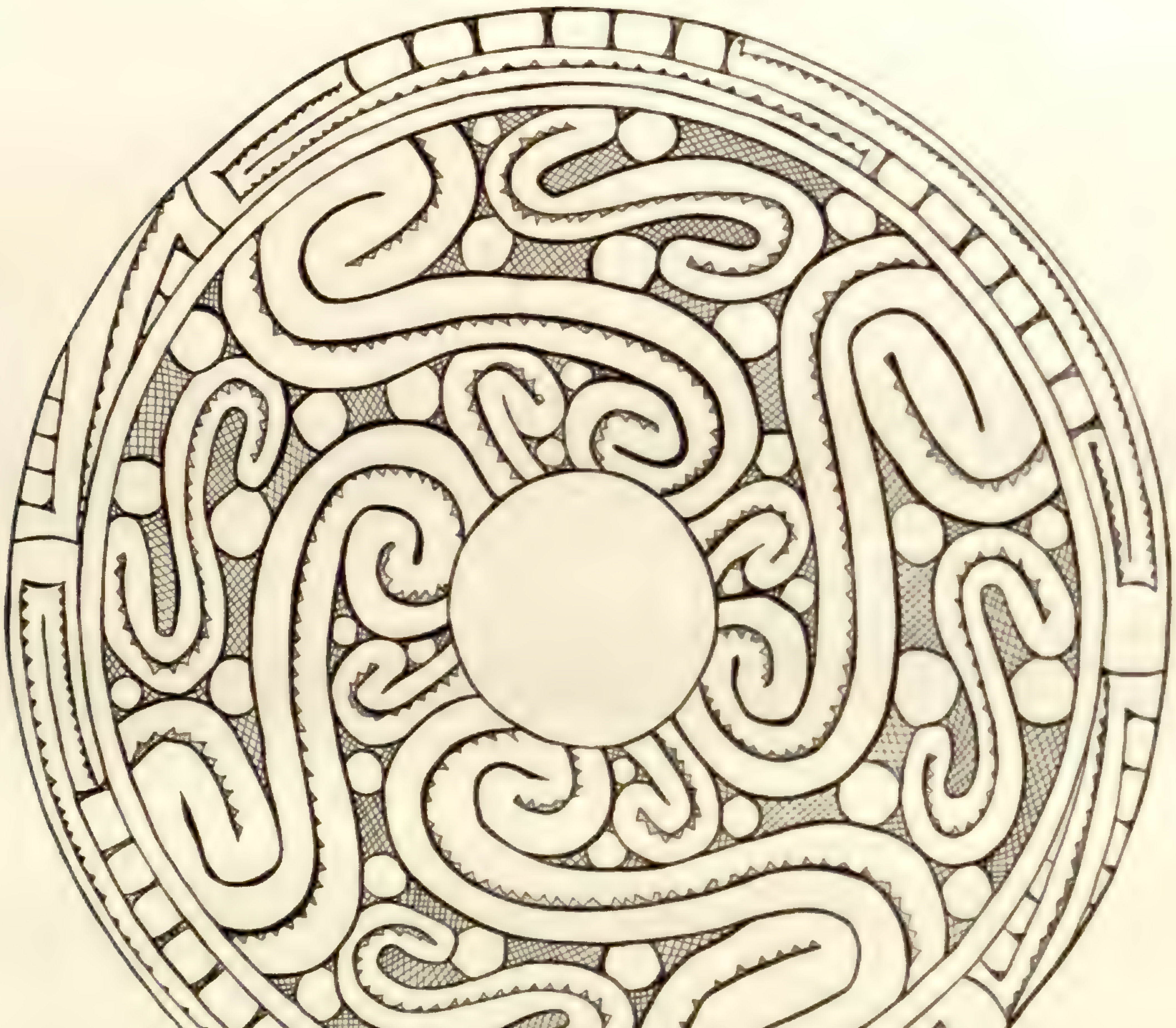


FIG. 34.—Vessel No. 71. Decoration. (About half size.)

FIG. 35.—Vessel No. 130. Glendora. (Diam. 7.75 inches.)

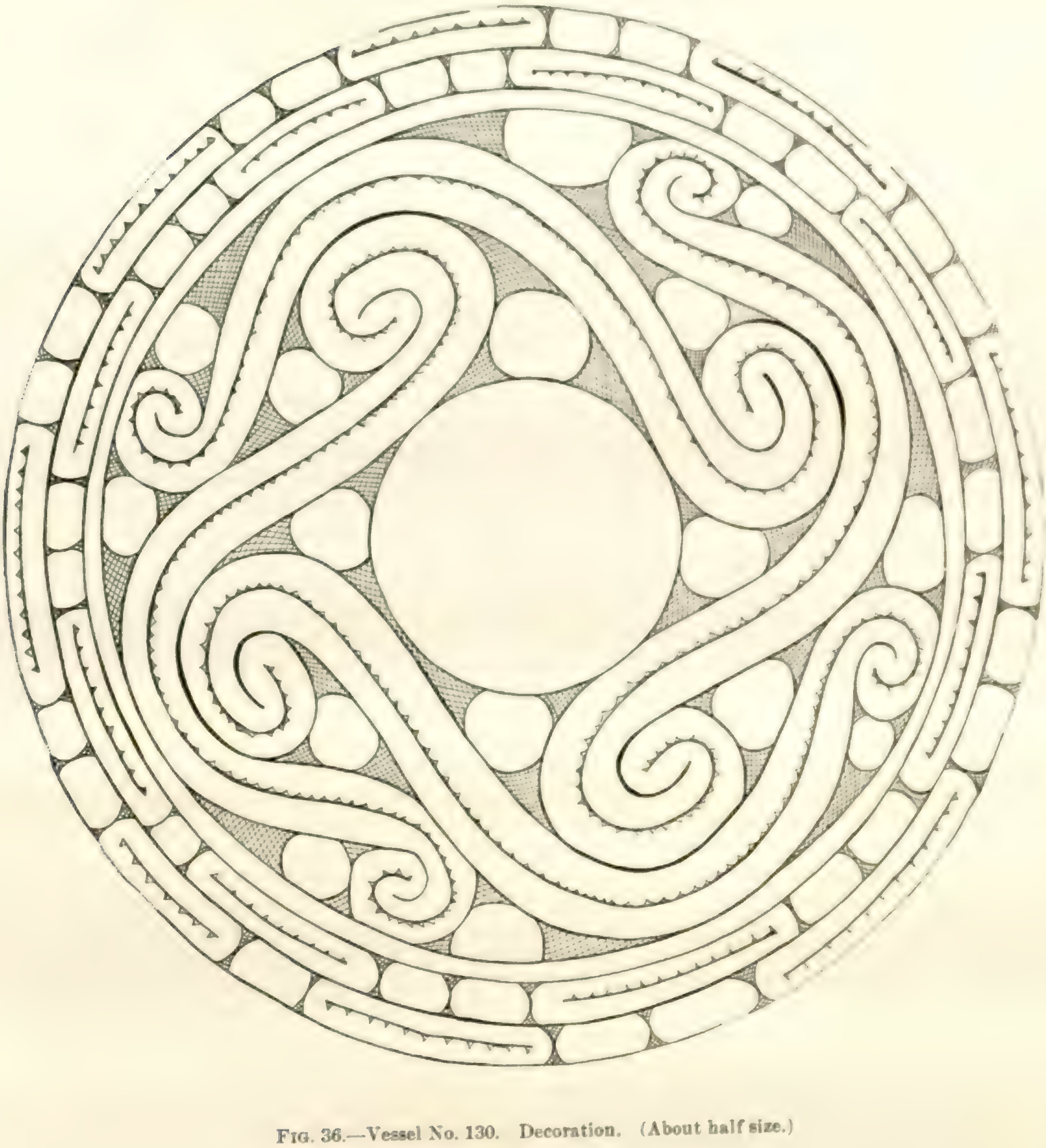


FIG. 36.—Vessel No. 130. Decoration. (About half size.)

FIG. 37.—Vessel No. 13. Glendora. (Diam. 6.9 inches.)

FIG. 38.—Vessel No. 13. Decoration. (About half size.)

FIG. 39.—Vessel No. 307. Glendora. (Diam. 5.7 inches.)

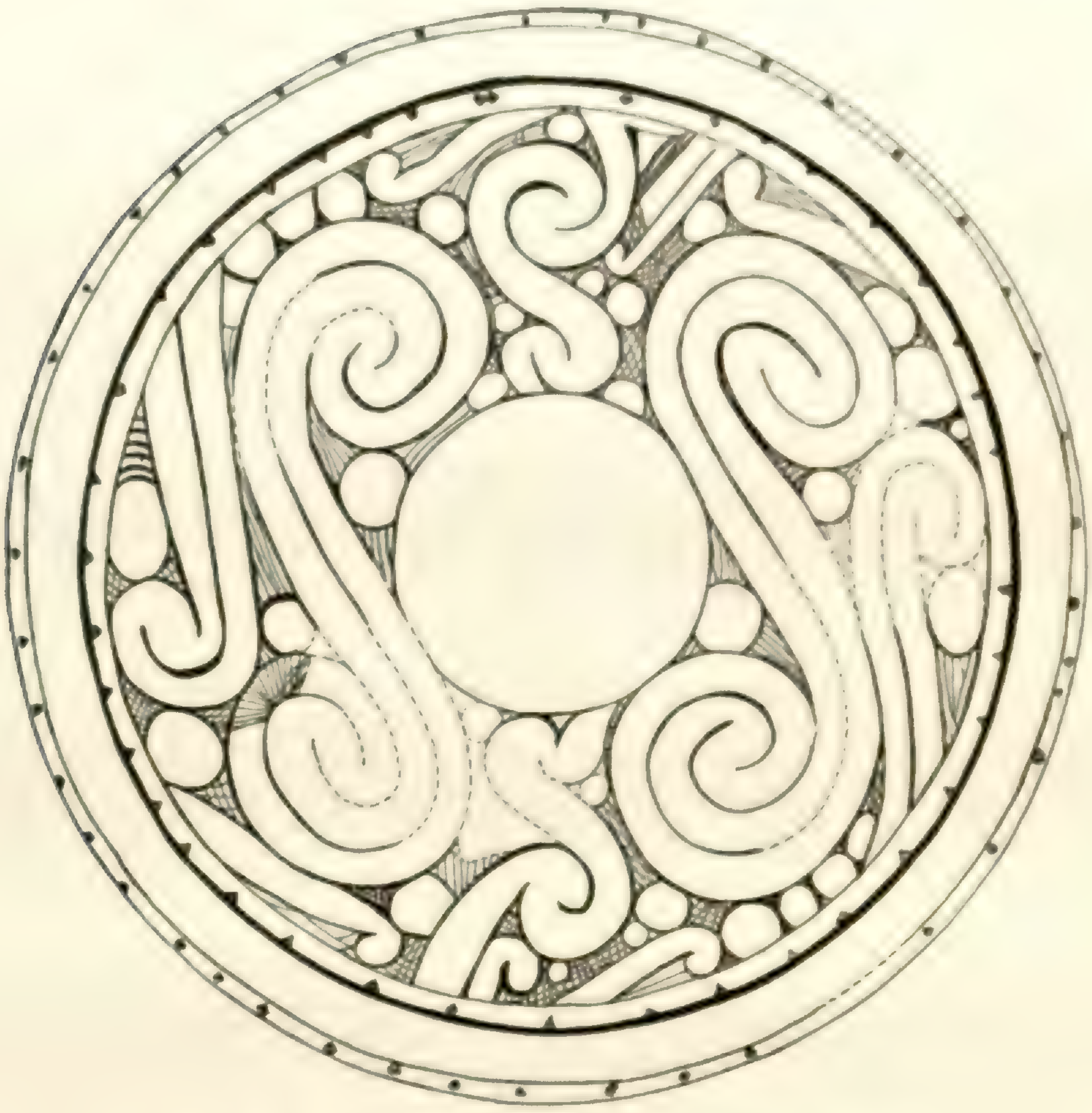


FIG. 40.—Vessel No. 307. Decoration. (About half size.)

Fig. 41.—Vessel No. 111. Glendora. (Diam. 7 inches.)

Fig. 42.—Vessel No. 111. Decoration. (About half size.)

FIG. 43.—Vessel No. 276. Glendora. (Diam. 6 1 inches

FIG. 44.—Vessel No. 276. Decoration. (About half size.)

FIG. 45.—Vessel No. 273. Glendora. (Diam. 6.5 inches.)

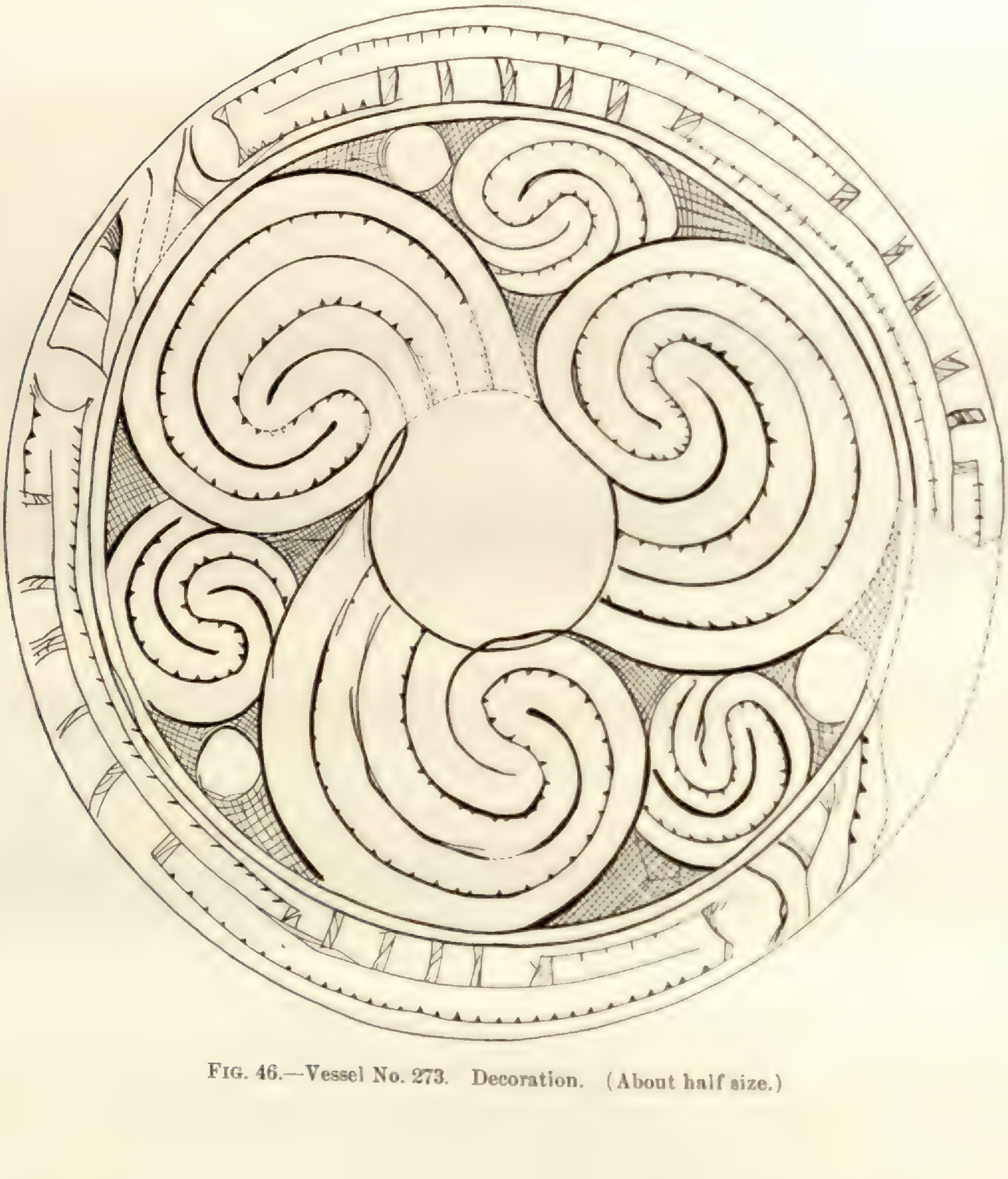


FIG. 46.—Vessel No. 273. Decoration. (About half size.)

FIG. 47.—Vessel No. 257. Glendora. (Diam. 6 inches.)

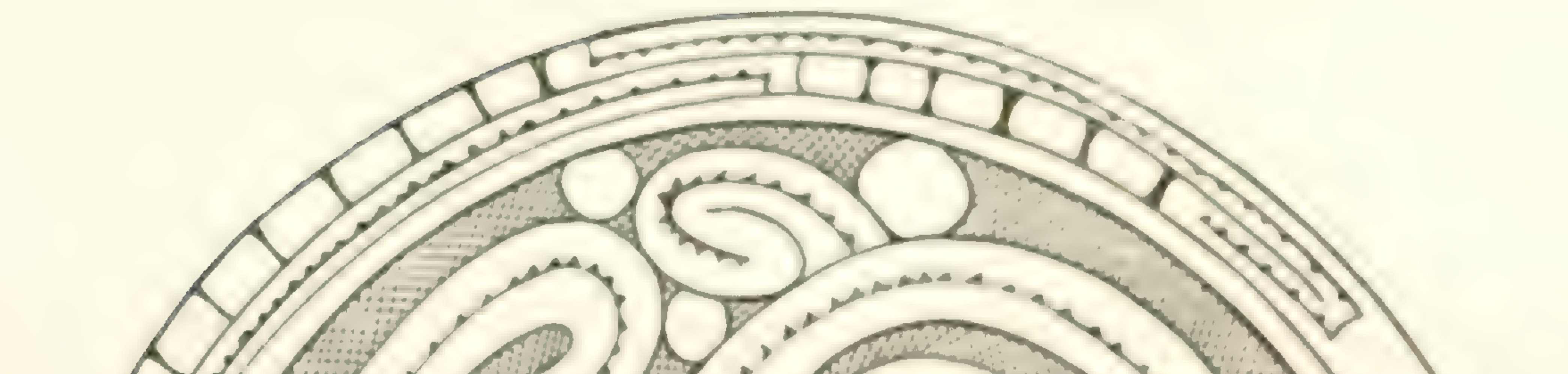


FIG. 48.—Vessel No. 257. Decoration. (About half size.)

FIG. 49.—Vessel No. 142. Glendora. (Diam. 8 inches.)

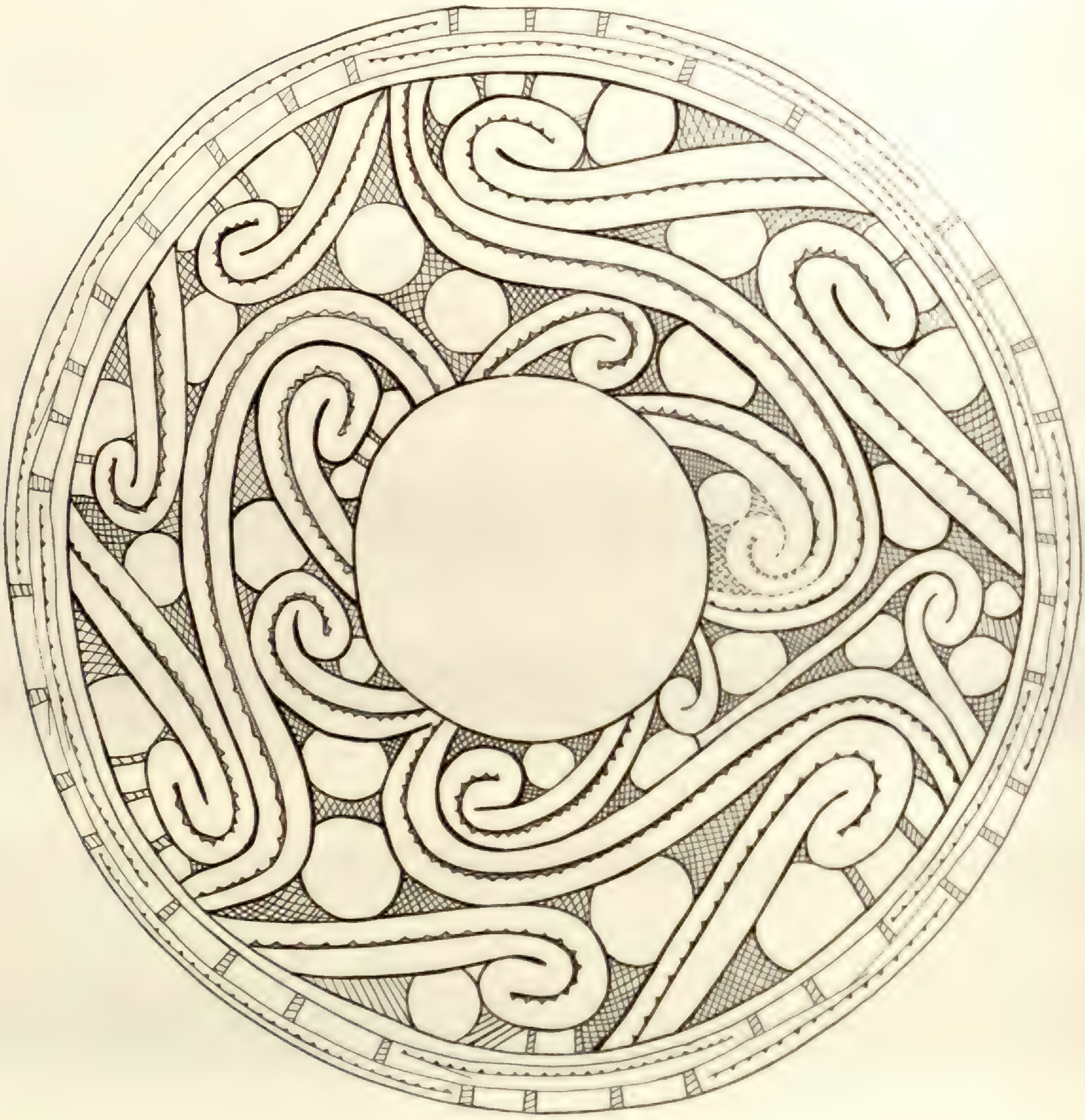


FIG. 50.—Vessel No. 142. Decoration. (About half size.)

FIG. 51.—Vessel No. 89. Glendora. (Diam. 6.7 inches.)

FIG. 52.—Vessel No. 89. Decoration. (About half size.)

FIG. 53.—Vessel No. 153. Glendora. (Diam. 6.2 inches.)

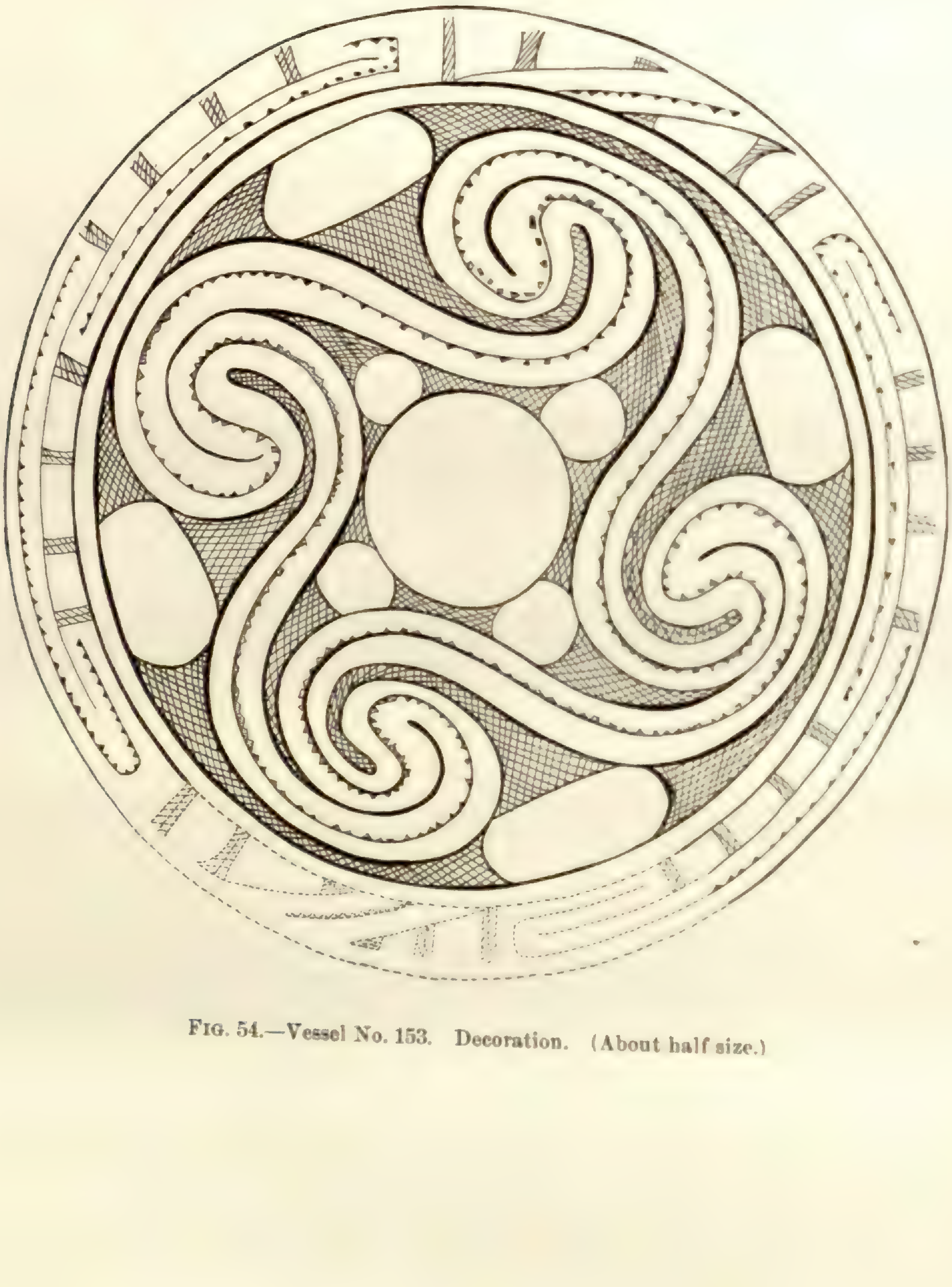


FIG. 54.—Vessel No. 153. Decoration. (About half size.)

Vessel No. 68. A bowl of rather porous, yellow ware, having over the entire exterior a trailed design composed mainly of a beautiful form of the swastika (Fig. 55).

Vessel No. 169. A bowl of brown ware. The scroll decoration shown in Fig. 56 appears three times, and half of it is repeated to fill an otherwise unoccupied space. These scrolls appear in spaces formed by bands vertically placed. The field, in two instances, is cross-hatched; in the other two it is made up of diagonal lines.

Vessel No. 70. This vessel of yellow ware (Fig. 57), with flat base, shoulder, and a low upright neck, belongs to a type fairly common in the Glendora cemetery. The decoration, incised, consists principally of a stepped design (so well known in ancient south-western United States and in Mexico) six times shown, upright and inverted, alternately.

Vessel No. 128. This vessel, of the same type as the preceding one, has a trailed decoration, possibly representing an aboriginal form of the eye (Fig. 58).

Vessels Nos. 2, 166, 220. All these vessels (Figs. 59, 60, 61) belong to the same type as the two vessels just described.

Vessel No. 186. This vessel (Fig. 62), slightly asymmetrical, has a rude, incised decoration around the body and on the base, shown diagrammatically in Fig. 63.

Vessel No. 256. A pot of striking appearance, its dark ware, of excellent quality, bearing trailed designs made up principally of combinations of the scroll, with a field of punctate markings, on the upper part (Fig. 64). There is soot on the body of the vessel.

Vessel No. 183. A pot of excellent, black, polished ware, having on two opposite sides of the neck four holes for suspension (Fig. 65). The design, in the incised lines of which red pigment remains in places, appears four times and is confined to the neck.

Vessel No. 102. This vessel of dark ware, with spheroidal body, flat base, constricted neck slightly flaring at the rim, has a roughly executed trailed design made up of bands of diagonal, parallel lines, the lines in reverse direction in alternate bands (Fig. 66).

Vessel No. 251. A pot of inferior, brown ware, with a flat base and having on the body a trailed decoration consisting largely of concentric circles and parallel lines. Around the neck are parallel, encircling lines, also trailed (Fig. 67).

Vessel No. 114. A cooking vessel, as evidenced by the soot upon it, of brown ware, with two opposite holes for suspension, made through projections originally solid. The design, trailed and punctate, consists mainly of an ordinary scroll combination (Fig. 68).

Vessel No. 96. A short-necked bottle of yellow ware, with flat base, globular body, and constricted neck (Fig. 69), has, by way of decoration, partly interlocked scrolls appearing three times on the body; on the neck is rude, lined decoration.

Fig. 55.—Vessel No. 68. Glendora. (Diam. 4.9 inches.)

Fig. 56.—Vessel No. 169. Glendora. (Diam. 6.2 inches.)

Fig. 57.—Vessel No. 70. Glendora. (Diam. 6.2 inches.)

Fig. 58.—Vessel No. 128. Glendora. (Height 6.8 inches.)

FIG. 59.—Vessel No. 2. Glendora. (Diam. [illegible] inches.)

FIG. 60.—Vessel No. 166. Glendora. (Height 4.1 inches.)

FIG. 61.—Vessel No. 220. Glendora. (Height 4.1 inches.)

FIG. 62.—Vessel No. 186. Glendora. (Diam. 3.7 inches.)

FIG. 63.—Vessel No. 186. Decoration. (About half size.)

FIG. 64.—Vessel No. 256. Glendora. (Height 4.5 inches.)

Fig. 65.—Vessel No. 183. Glendora. (Diam. 5.[illegible] inches.)

Fig. 66.—Vessel No. 102. Glendora. (Height 5.4 inches.)

FIG. 67.—Vessel No. 251. Glendora. (Height 4.5 inches.)

FIG. 68.—Vessel No. 114. Glendora. (Diam. 5 inches.)

Fig. 69.—Vessel No. 26. Glendora. (Diam. 6 inches.)

FIG. 70.—Vessel No. 138. Glendora. (Diam. 6 inches.)

ANTIQUITIES OF THE OUACHITA VALLEY.
GLENDORA, VESSEL NO. 130. (HEIGHT, 5.6 INCHES.)

Vessel No. 138. A bottle of coarse, yellow-brown ware, with flat base and having as decoration on the body a double row of concentric circles connected by parallel, incised lines, vertically and laterally. Around the neck are curious hook-shaped figures of a kind sometimes found on Southern pottery (Fig. 70).

Vessel No. 130. A pot (Plate III) which at one time has been covered with red pigment over the entire exterior and the inner side of the neck, though at present the coloring material is decidedly worn, allowing the yellow ware to show through in places. The decoration consists of a design made up in the main of incised circles and spirals. There are four holes for suspension on two opposite sides of the vessel.

FIG. 71.—Vessel No. 249. Glendora. (Height 8.4 inches.)

Vessel No. 249. A bottle of light-brown ware, with tripod support, a not unusual form in the middle Mississippi region, to the northward. The legs, which are hollow, have been made separately from the body, and fitted on after the completion of the remainder of the vessel. Several small holes have been drilled through the vessel at each of the points of union with the legs to enable the latter to serve as receptacles for liquid, in conjunction with the body of the bottle. There is a rude, incised and punctate decoration (Fig. 71).

Vessel No. 147. A bottle of compound form, of common, porous ware (Fig. 72), representing one vessel with another superimposed. The decoration, rudely incised, on the upper part consists of spirals and on the lower part is made up of a meander partly surrounding disks, perhaps having the eye for motive.

Vessel No. 261. A bottle of black, polished ware (Fig. 73), having on the upper half of the body a decoration consisting of a current scroll in a cross-hatch field in which are small disks; and below, a design which can be better understood from examination of the figure than from verbal explanation.

Professor Holmes,[1] describing a vessel somewhat similar to this one in form, speaks of it as having a "broad, convex, hood-like collar that encircles the neck and spreads out over the body like an inverted saucer."

Vessel No. 22. This pot (Plate IV), coated inside and out with red pigment of superior quality, bears in addition an incised decoration, consisting mainly of meanders and disks. There are four holes for suspension on opposite sides of the body below the neck.

FIG. 72.—Vessel No. 147. Glendora. (Height 8 inches.)

FIG. 73.—Vessel No. 261. Glendora. (Height 8 inches.)

[1] Fourth Ann. Rep. Bur. Am. Ethn., p. 416, Fig. 435.

ANTIQUITIES OF THE OUACHITA VALLEY.
GLENDORA, VESSEL NO. 22. (FULL SIZE.)

COCKAYNE, BOSTON.

Vessel No. 181. A vessel of dark ware, of the "teapot" variety, which seems to be peculiar to eastern Arkansas and nearby regions. This vessel, 3.1 inches in height, with flat base, one of two found by us in the Ouachita valley (the other coming from the Keno Place, near Glendora), has a volute decoration of trailed lines, recalling that on the "teapot" figured by Holmes[1] as coming from Arkansas.

Vessel No. 230. A bottle of brown ware, 5.5 inches in height, with an incised decoration, rather faintly executed, made up of a design shown herewith in diagram (Fig. 74), which continues around the body of the vessel.

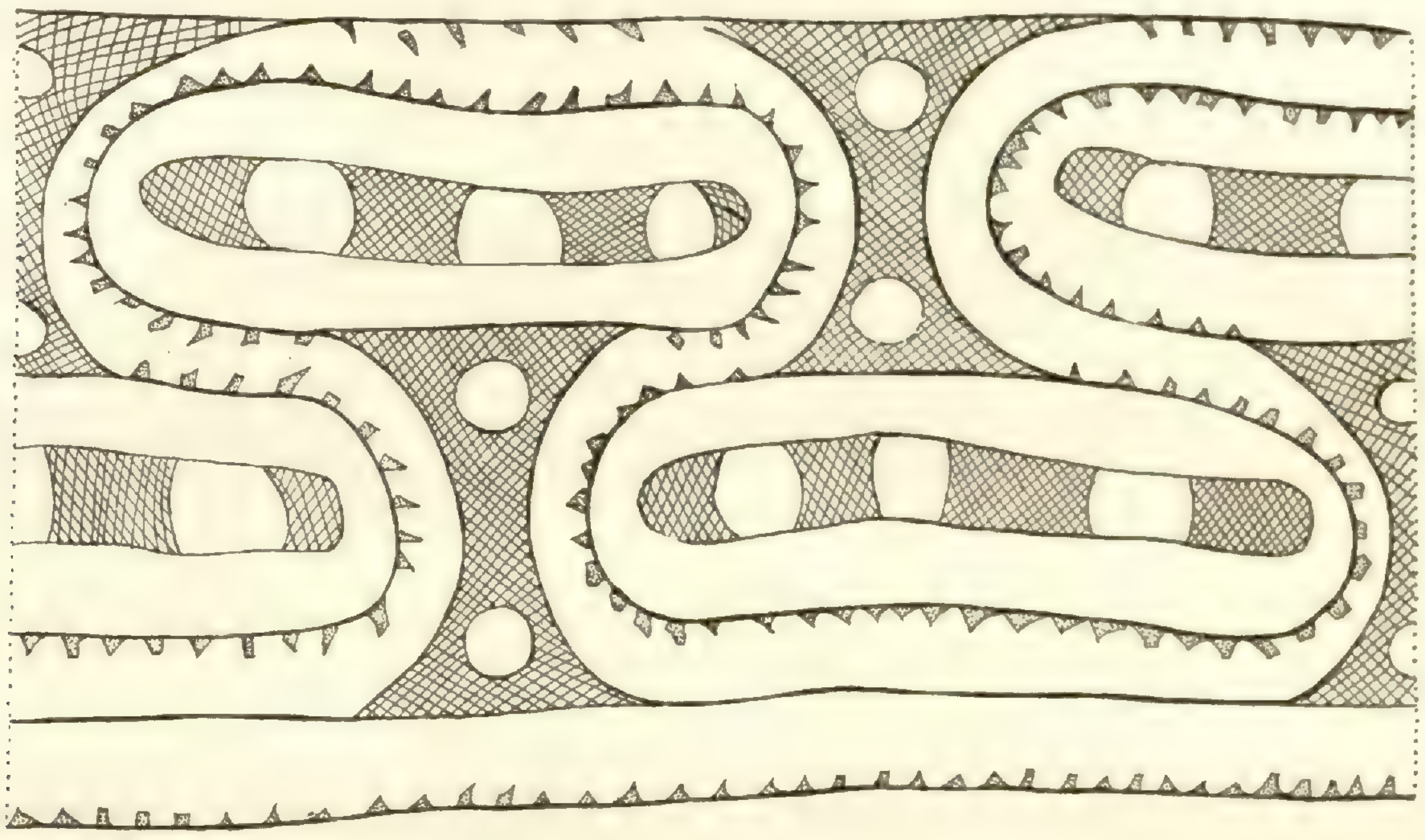


FIG. 74.—Vessel No. 230. Decoration. (About two-thirds size.)

Vessel No. 250. A bowl of porous, yellow ware, 8.4 inches in diameter, coated on the inside with red pigment, which extends also exteriorly about an inch below the rim. This bowl is of a type found in abundance along the Arkansas river.

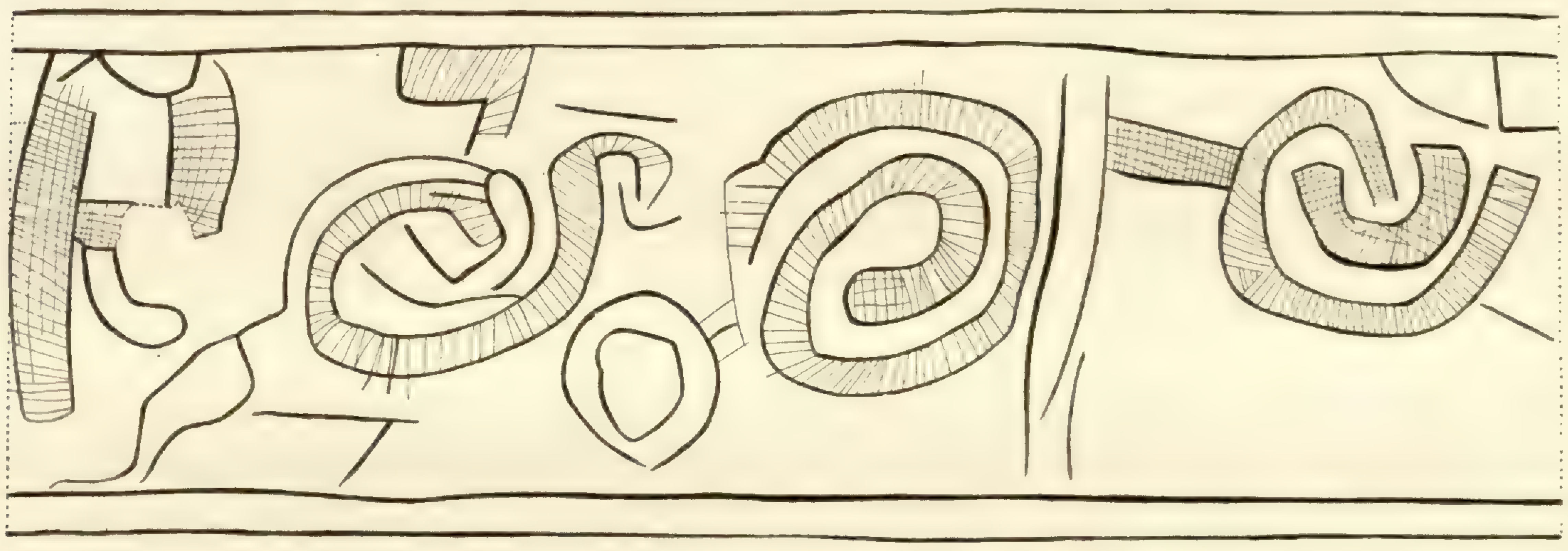


FIG. 75.—Vassel No. 12. Decoration. (About one-third size.)

Vessel No. 12. A bottle, 5 inches in height, of coarse, yellow ware, having a slight flattening at the base and a swelling at the neck. The decoration, rudely executed, is here reproduced in diagram (Fig. 75).

[1] Twentieth Ann. Rep. Bur. Am. Ethn., Pl. XVIII b.

Vessel No. 312. A bowl of inferior, porous ware, 3.4 inches high, almost entirely covered with incised decoration, rudely done, consisting principally of forms of the stepped design, shown here in diagram (Fig. 76).

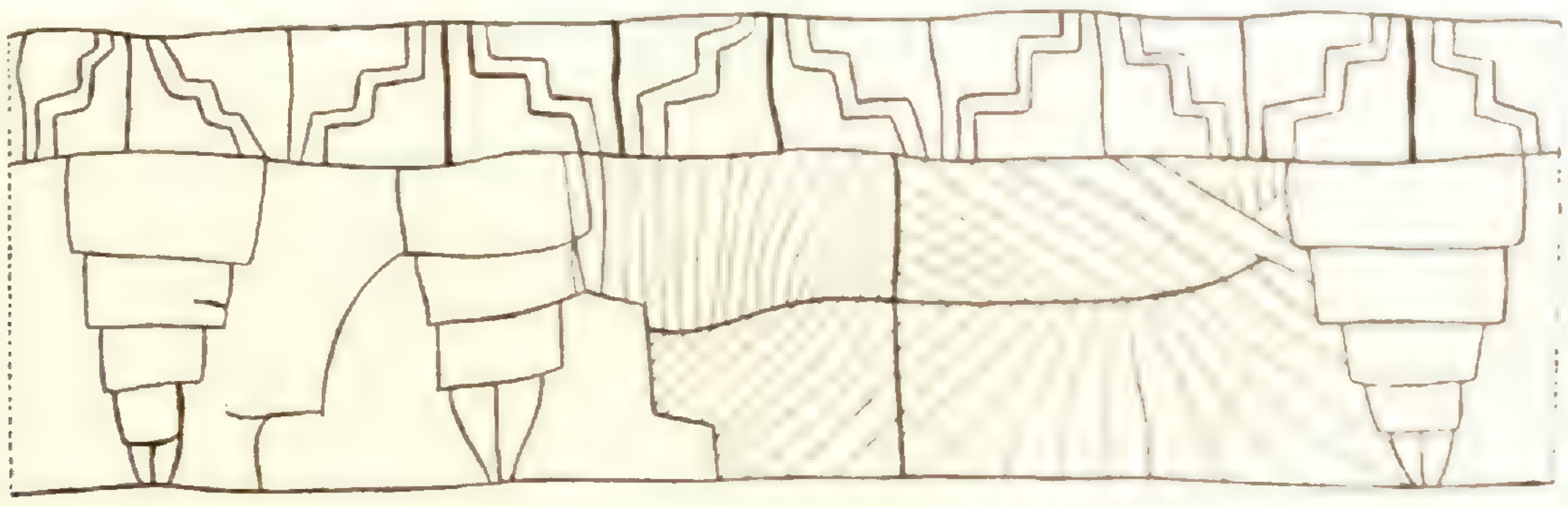


FIG. 76.—Vessel No. 312. Decoration. (About one-third size.)

Vessel No. 83. The body of a bottle of irregularly fired ware, with flat base. The neck is missing. The decoration consists of a five-pointed star made up of incised lines (Fig. 77).

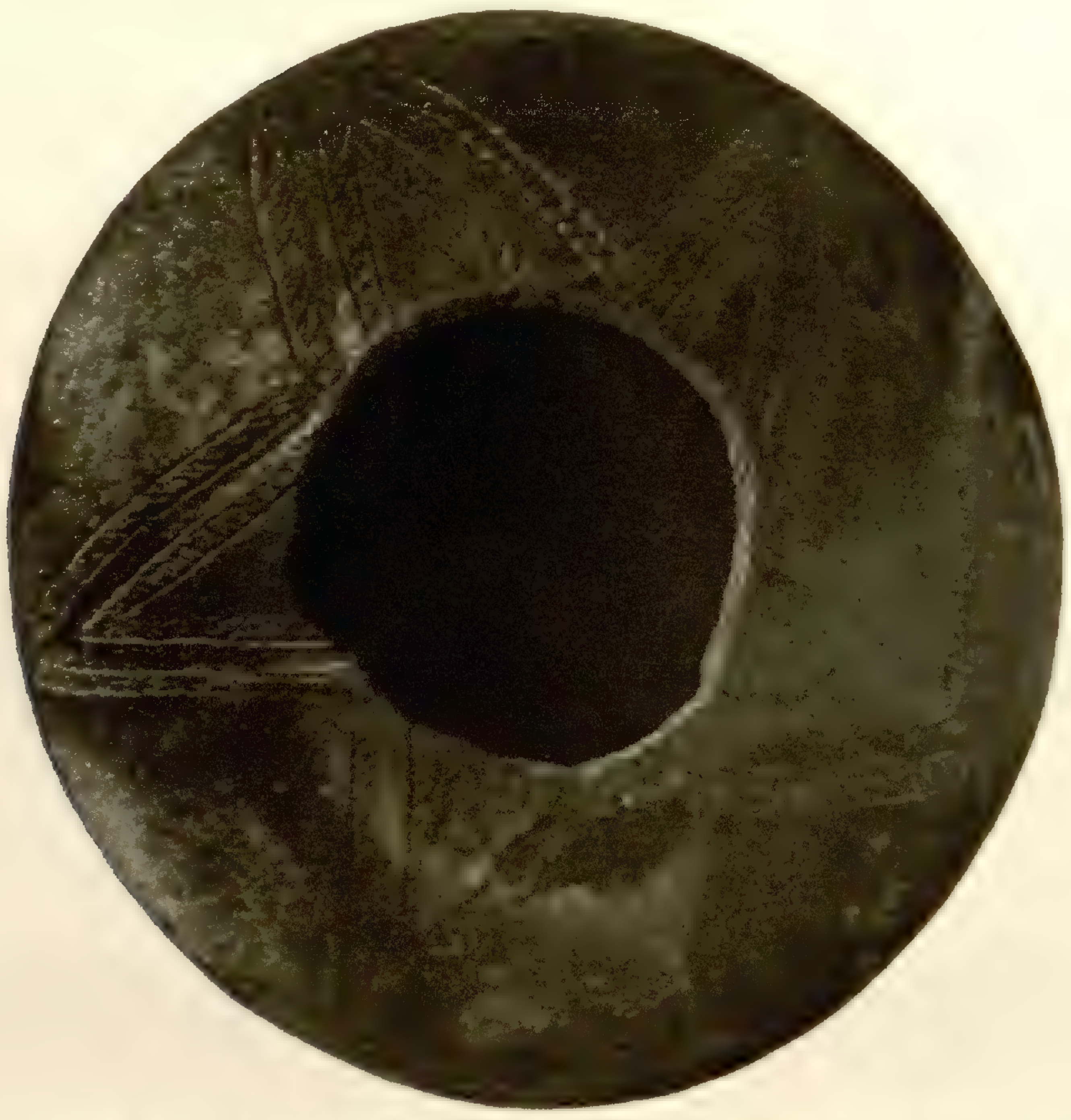


FIG. 77.—Vessel No. 83. Glendora. (Diam. 5.4 inches.)

Vessel No. 314. A human-effigy bottle (Fig. 78) of a type commonly found in regions to the northward of the Ouachita valley, though this particular vessel, in ware and in modeling, is far inferior to most of those from the middle Mississippi region. This type is very unusual in the Ouachita valley.

Vessel No. 289. A bowl of inferior, yellow ware, found in fragments. On opposite sides of the vessel had been two grotesque, seated figures, one of which was missing, though the portion of the bowl on which it had been was recovered. The remaining effigy is shown in Fig. 79.

FIG. 78.—Vessel No. 314. Glendora. (Height 5.7 inches.)

FIG. 79.—Vessel No. 289. Glendora. (Full size.)

Fig. 80.—Vessel No. 184. Glendora. (Height 5.6 inches.)

Vessel No. 184. A wide-necked bottle of brown ware, with flattened base, having on the body a most evenly-spaced and beautifully executed, trailed design, four times shown, consisting mainly of a double series of volutes (Fig. 80).

FIG. 81.—Vessel No. 296. Glendora. (Height 5.75 inches.)

Vessel No. 296. A bottle of excellent, black ware, unique in form, with four projecting lobes, one at each corner of the base, and having a beautifully executed, trailed decoration consisting largely of combinations of the scroll (Fig. 81). This bottle is one of the most striking of the vessels from Glendora, a place long to be remembered for the excellence and artistic beauty of its better class of pottery.

Vessels Nos. 219 and 136. These beautiful bowls, shown on Plate V, covered inside and out with polished, red pigment of an excellence unknown to regions lying northward, though the use of pigment was so extensive there, show no deterioration through lapse of time. The decoration on both, incised, is a combination of the

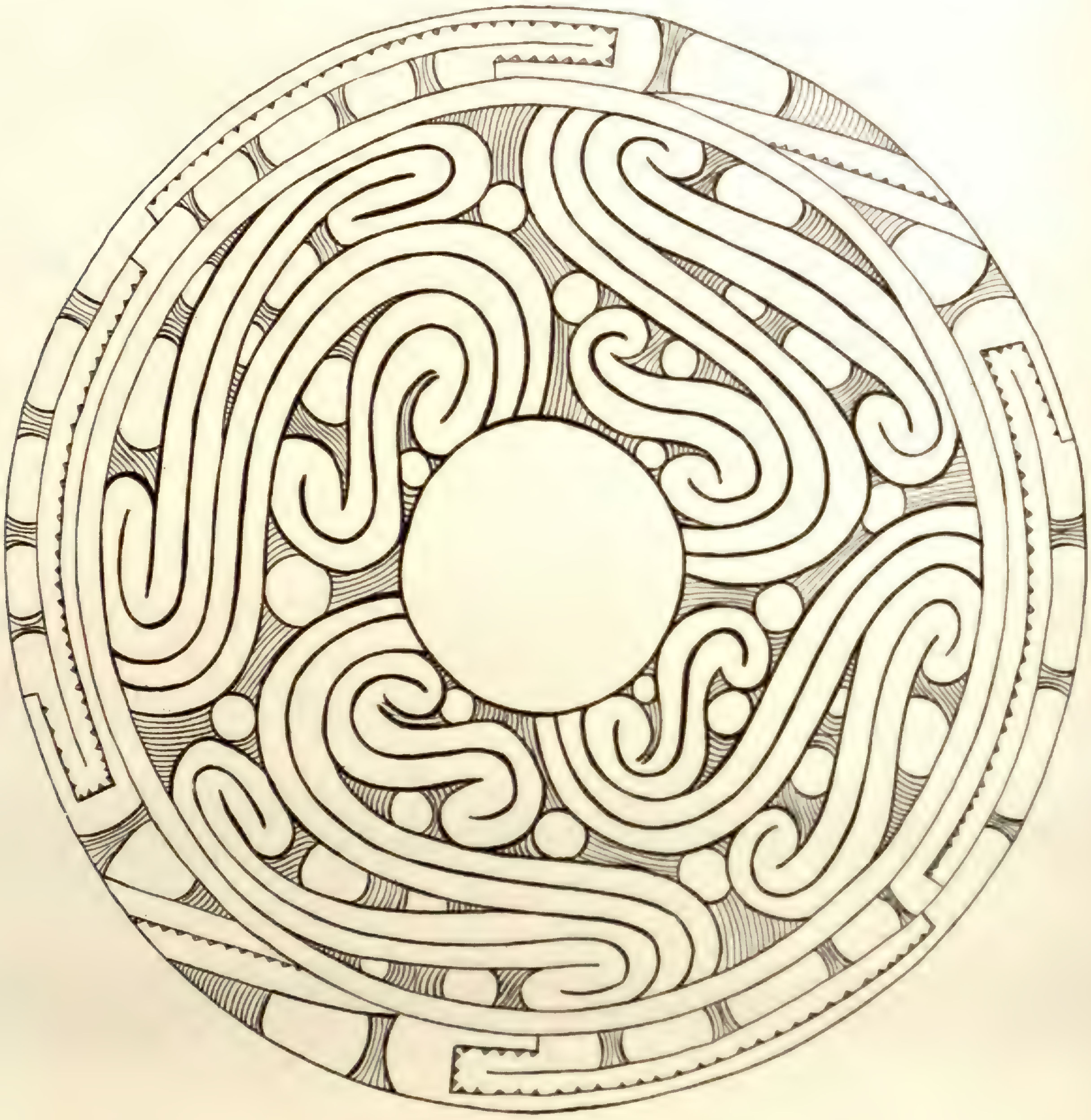


FIG. 82.—Vessel No. 136. Decoration. (About two-thirds size.)

scroll, on a cross-hatch field in the case of the smaller bowl, and in a field of diagonal lines on the larger vessel. Traces of white pigment are evident in the incised lines of the smaller vessel. A diagram bearing the decoration on the larger bowl (Vessel No. 136) is shown in Fig. 82. The decoration on the smaller bowl closely resembles designs already shown as coming from Glendora cemetery.

ANTIQUITIES OF THE OUACHITA VALLEY.
GLENDORA. VESSELS NOS. 219 and 136. (FULL SIZE.)

COCKAYNE, BOSTON

Mound near Lock Number Six, Ashley County, Ark.

Entering the swamp (in low stages of the river) about one-quarter mile above Lock Number Six, on the right-hand bank going up stream, and keeping a northerly course through the woods for about one mile in a straight line, one reaches, if aided by a skillful guide, a mound on a low ridge on which are pine trees.

The mound, of sand, attains a height of 10 feet 3 inches above the general level and is 93 feet across its circular base. The summit-plateau, also circular, has a diameter of 33 feet. This mound, which has every appearance of belonging to the domiciliary class, was considerably dug into by us, but not demolished. Three burials, much decayed, were found near the surface.

Trial-holes in the level ground near by failed to disclose burials.

About 200 yards in an easterly direction from the mound is a circular rise in the ground, in which eight trial-holes yielded nothing.

Mounds near Green Lake, Bradley County, Ark.

Green Lake, a former course of the Ouachita river, makes in from that river from the right-hand side going up, about six miles by water below Caryville.

About one mile from the landing, on the eastern side of the lake, is the property of Dr. B. H. Green, of Warren, Ark., which, though long under cultivation in the past, was fallow at the time of our visit.

On this property is a group of eight mounds, all of sand, of which the southernmost mound is the only one of considerable size and which alone retains its original form.

This mound, which has never been under cultivation, is 19 feet in height, measured from the southern side. It is practically square, with a basal diameter of about 160 feet. The summit-plateau, which is level, is also square, with a diameter of 80 feet. It was fairly riddled with trial-holes by us in an unsuccessful endeavor to discover a cemetery.

The remaining mounds also were dug into without success, except the discovery in one of two badly decayed human skulls lying together near the surface.

It is likely that these mounds, and the level ground, which also we investigated in places, have in the past yielded what aboriginal relics they possessed, during the long-continued cultivation to which they have been subjected, though there seems to be no history of the discovery of artifacts on this property in comparatively recent time.

On the surface there were few signs of occupancy by aborigines. Here and there was a fragment of chert, and a small "celt," roughened at one end for hafting, was picked up by us.

Cemetery at Caryville Landing, Union County, Ark.

The aboriginal cemetery at Caryville Landing is well known, word of it having reached us far down the river. Unfortunately its reputation is based mainly on the past, the cemetery having been situated on ground which has been gradually

eaten away by the river in recent years, according to the Messrs. Poole Brothers, owners of the plantation, and resident there. During the process of destruction, according to these gentlemen, many human bones, some associated with vessels of earthenware, have been laid bare.

A number of holes were sunk by us in a small area on the river bank, having a deep gully behind it, this area being apparently all that remained of the original cemetery.

Human bones were found in three places—two skeletons at length on the back, and a few fragments of bone, all in the last stage of decay. With the last burial was a pot of moderate size, of porous, inferior ware, with a rude decoration of straight lines and punctate markings.

In an adjacent field were two small dwelling-sites in which a number of trial-holes were dug by us, in addition to a number in other parts of the field, all, however, being of no avail.

Mounds near Pigeon Hill, Union County, Ark.

Pigeon Hill, a settlement on land not subject to overflow, has, behind it, in woods belonging to Mr. W. H. Harry, then living on the place but now a resident of Texarkana, Texas, a great number of low mounds, some circular in basal outline, some irregular.

A number of these mounds were dug into by us and were found to be of clayey sand of a raw yellow color, without admixture of organic matter. No bones or artifacts were encountered. The mounds, presumably, were sites for wigwams, intended to protect them against inflow of rain which is likely to gather in pools on the ground.

Cemetery in Boytt's Field, Union County, Ark.

Boytt's Field, the property of Mr. W. H. Harry, whose place we have just described, is on the river bank about one mile in a W. by N. direction from Pigeon Hill.

The field, almost exclusively of sand (in which one is so much less likely to break artifacts and bones in digging than is the case in clay), is, we are informed by Mr. Harry, fifty acres in extent and is fractional NW. quarter, Section 32, Township 16 south, Range 12 west.

In the northeastern part of the field are the remains of a mound much spread by cultivation, in which no bones or artifacts were discovered by us.

Members of Mr. Harry's family, however, with considerable shrewdness for persons inexperienced in investigations of the sort, had dug shortly before our arrival, into the level ground about forty yards E. by S. from the mound, where the soil looked darker than elsewhere in the field, and had found there three skeletons in fairly good condition.

Three days and a half were devoted by us to a careful investigation of Boytt's Field, resulting in the discovery of burials here and there, within an area of about

20 by 25 yards, where the skeletons had been found before our coming. Burials also were met with between the mound and this area, as well as a short distance farther east. In addition, several burials were encountered in a few very restricted areas near together, almost at the eastern end of the field.

The burials lay (with the exception of those in a pit to which we shall refer later) none deeper than 32 inches and some at a depth considerably less than that; but none was immediately below the surface, and there was no evidence that the plow had been in contact with any burial.

Boytt's Field is on comparatively high ground, which is seldom submerged, and the part of the field in which the burials were encountered is higher than most parts of the remainder of the field.

Fifty-five burials were discovered by us, not taking into account a considerable number of human bones which had been widely scattered by the aborigines in digging successive graves. It was impossible for us to determine how many individuals were represented by these disturbed bones, but probably eight or ten would be a fair estimate. When parts of a skeleton had been disturbed, but all the bones had not been scattered, the burial is described as an aboriginal disturbance.

The forms of burial were as follows:

At full length on the back,[1]	45
Lying partly flexed on the right side,	2
Lying partly flexed on the left side,[2]	3
Aboriginal disturbances,	5

The pit to which reference has been made was 4 feet deep and extended 2 feet below the dark surface soil. The maximum diameter of the pit was 3.5 feet, so near as we could determine. Three skeletons had been disturbed in its making.

Throughout the pit, here and there, were fragments of musselshells, some bearing traces of fire; charcoal; vertebræ and fragments of larger human bones, which showed no marks of fire. In addition, throughout the pit were scattered fragments of human bones, some calcined and some only charred. These fragments were distinctly not a deposit such as one sometimes finds forming a layer of calcined bones when cremation has been practised as a form of aboriginal burial.

The condition of the bones found in Boytt's Field varied greatly. In one locality but few were saved; in other places the condition of the bones was better.

There was no orientation as to the heads of the skeletons.

Burial No. 36, an adult, lying at full length on the back, had the skull turned from the skeleton, in a way to show detachment at the time of interment. In addition, the mandible was missing.

A number of skulls and many other bones of the skeletons from this cemetery were sent to the United States National Museum.

With the exception of earthenware vessels, but few artifacts were discovered in the Boytt's Field Cemetery, and curiously enough, no objects of any sort lay with burials of children.

[1] In two cases the forearms were bent against the upper arms.

[2] In one instance the left arm was raised, with the forearm across the top of the head.

Another exceptional feature is the fact that in one area excavated by us, in which sixteen burials were found, no object of any kind was present with the dead, though earthenware vessels lay with burials in another area not far distant.

Plentiful throughout the sand were pebbles of sizes suitable for use as hammer-stones and pebble-hammers, though none had been so used, as far as appearance indicated.

Eight pebbles, averaging about an inch in diameter, were found in the body of a water-bottle without a neck, which lay with a burial.

One small arrowhead of quartz was near a skeleton, and eight others of chert, all barbed and beautifully wrought, the smallest but .8 of an inch in length, were found scattered in the sand, apart from human remains. There was found also the scale of an alligator-gar. Scales of this fish, according to Du Pratz, were used as arrowpoints in the Mississippi region.

Two tubular beads of shell, each about .5 of an inch in length, lay at the neck of a skeleton.

A "celt" about 3 inches in length, of a rather soft stone, found apart from human remains, was given by us to Mr. Harry, the owner of the cemetery.

Lying beside an earthenware vessel which was with a burial (as were all the vessels found by us in this cemetery), closely associated, were: a pebble; a fragment of red oxide of iron; part of a tine of deer-antler about 1.5 inch in length, cut squarely across at the proximal end.

Singly, apart from human bones, were: a disk of earthenware about 2 inches in diameter, not cut from a fragment of a vessel, but coarsely made by modeling and firing; part of an undecorated tobacco-pipe of earthenware; a fragment of an earthenware vessel, roughly rounded and perforated at the center, the hole being made in an aboriginal way, namely, countersunk on both sides; two well-made, perforating implements of bone, each having the articular part remaining; a bone of a raccoon; the incisor of a beaver, an animal still found in this part of Arkansas; bones kindly identified by Prof. F. A. Lucas as belonging to the Indian dog, and to a large specimen of the Virginia deer; and numerous fragments of carapaces probably belonging to the tortoise.

Twenty-four vessels of earthenware lay with the burials, singly, sometimes a pair, and in one instance three with a single burial.

These vessels were invariably near the head, usually alongside the skull and never farther from it than the shoulder or upper arm.

Several bowls were inverted and one lay on its side. Over one vessel was turned a fragment consisting of the base of a larger vessel. In some of the vessels were musselshells which doubtless had been used as spoons.

With one or two exceptions, the earthenware from Boytt's Field is shell-tempered, and some of it is of excellent quality. Although in some cases red pigment appears in the lines of incised decoration, no coating of color is present on vessels from this place, though a small fragment of pottery picked up in the field has brick-red pigment of excellent quality on each side. In form, the pot, the

bowl, and the bottle are represented—several of the bottles departing somewhat from the usual globular form of the body. The life-form is present in one instance.

The more noteworthy vessels from the cemetery in Boytt's Field will now be described in detail.

FIG. 83.—Vessel No. 1. Boytt's Field. (Height 8.75 inches.)

Vessel No. 20. A small water-bottle of coarse ware, without shell-tempering, having a rude, incised decoration representing interlocked scrolls, on part of which appear markings perhaps representing crests of the winged serpent.

Vessel No. 1. A bottle of compound form (a type in vogue among the aborigines who used the cemetery at this place), having a carelessly executed scroll design on the lower part of the body (Fig. 83).

Vessel No. 9. A bottle, also of compound form, bearing a roughly executed decoration of cross-hatched lines (Fig. 84).

Vessel No. 15. A bottle of dark ware, in shape tending toward the compound, bears on the upper part a faintly executed, incised decoration (Fig. 85).

Vessel No. 2. A bottle of dark ware (Fig. 86), with a well-made, trailed decoration composed of five series of parallel, curved lines forming a star-like figure, below which is an equal number of series of festooned, parallel lines.

FIG. 84.—Vessel No. 9. Boytt's Field. (Height 8.7 inches.)

FIG. 85.—Vessel No. 15. Boytt's Field. (Height 7.7 inches.)

Vessel No. 6. A bottle of hard, black ware (Fig. 87), with an incised, geometrical design on the upper portion of the body, forming a pleasant exception to the scroll so often found on the pottery of the Ouachita valley.

Vessel No. 10. A pot of brown ware, with spherical body, a short, upright neck, and flaring rim. The maximum diameter is 5.2 inches. The incised decoration, twice shown on the vessel, is illustrated in diagram in Fig. 88.

Vessel No. 8. A bottle from which the neck is missing, bearing a decoration (Diagram Fig. 89) appearing three times, consisting mainly of a spiral on which are attributes of the winged serpent. Above are disks, probably sun-symbols, somewhat impaired as to outline through exigency of space.

FIG. 86.—Vessel No. 2. Boytt's Field. (Height 6.8 inches.)

FIG. 87.—Vessel No. 6. Boytt's Field. (Height 9.5 inches.)

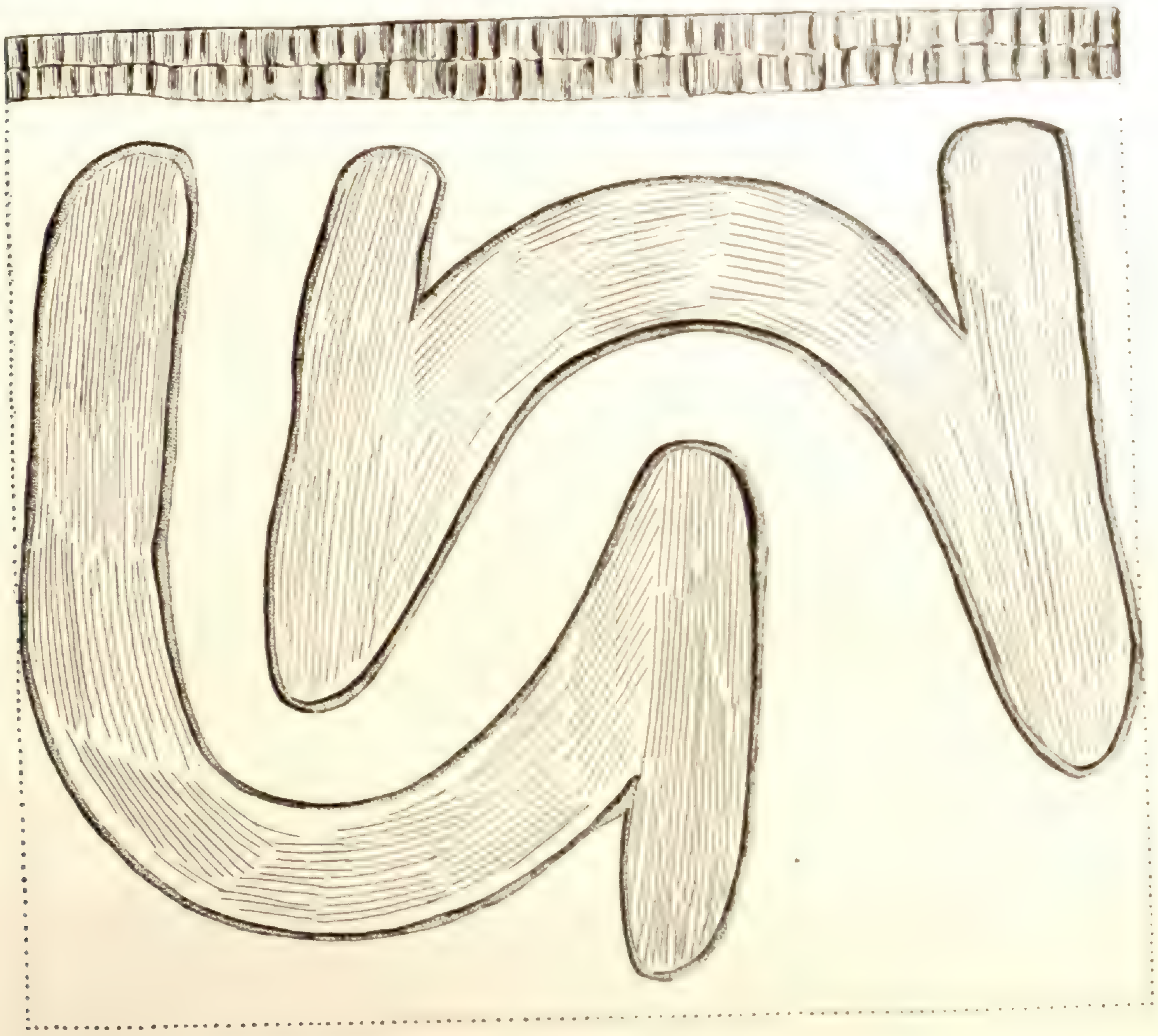


FIG. 88.—Vessel No. 10. Decoration. (About two-thirds size.)

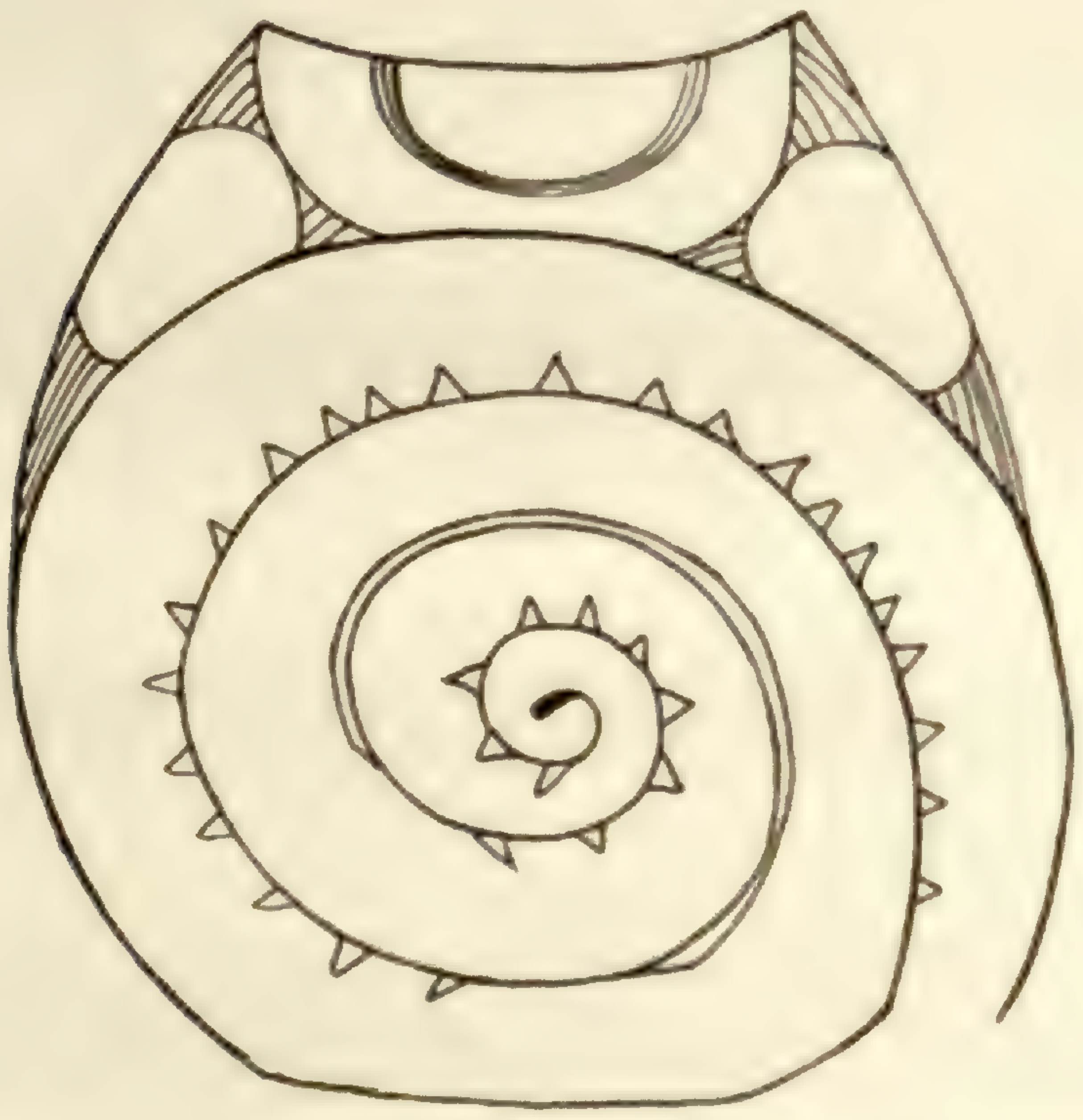


FIG. 89.—Vessel No. 8. Decoration. (About two-thirds size.)

Vessel No. 13. A life-form (Fig. 90) resembling to a certain extent one found in the cemetery at Myatt's Landing, farther down the Ouachita river. Both vessels, as we have explained in our account of that cemetery, have knobs in place of modeled heads of birds. In this vessel, however, extended wings are shown, and there is cross-hatch decoration on wings and tail on the upper and lower sides

FIG. 90.—Vessel No. 13. Boytt's Field. (Length 9 inches.)

MOUNDS NEAR PURDUE WOOD-CAMP, CALHOUN COUNTY, ARK.

In woods said to be on land belonging to the State, about three-quarters of a mile in a NNE. direction from Purdue Wood-camp, is a quadrangular mound about 9 feet high with basal diameters of 80 feet and 67 feet. The summit-plateau is 30 feet by 24 feet. This mound, evidently domiciliary, is partly surrounded by nine other mounds, all low and irregular.

Considerable digging in the mounds and in neighboring level ground, yielded neither bone nor artifact, and showed the soil to be a mixture of sand and clay, of a raw yellow color, with no trace of organic matter.

Cemetery at Bell Gin Landing, Union County, Ark.

Extending back from Bell Gin Landing is a ridge of high ground, flat on the summit, lying between swamp land which is dry in low stages of the river. This high ground, long under cultivation in the past, was fallow when visited by us. The owner, Mr. J. S. Staples, resides about one mile distant, at the town of Champagnolle.

Considerable digging in this territory showed rich soil in places, evidently darkened by aboriginal occupancy. Three burials were unearthed—one partly flexed on the left side, one at full length on the back, one a disturbance, near together and all without artifact of any kind.

Apart from human bones, in the soil, were a small "celt" smoothed only toward the cutting edge, the remainder left rough for hafting, and two implements of bone.

Mounds near Hill Landing, Union County, Ark.

Near Hill Landing, on property of Mr. N. T. Goodwin of Calion, Ark., are various low mounds of irregular shape, probably domiciliary.

About one-quarter mile WNW. from the landing is a field, probably about twelve acres in extent, having at its northern and its southern ends two small mounds, that at the northern end being partly within the field, while the other mound is immediately outside the fence. These mounds, which had been much trampled by stock, were dug into by us without result, the soil having a raw yellow shade. The field evidently had been an aboriginal place of abode, as there lay scattered around: bits of pottery; fragments of chert; part of a quartz crystal, somewhat broken, grooved for use as a pendant; two small "celts," seemingly of sedimentary rock; one chipped cutting implement of chert; four small masses of magnetite, one of which shows considerable grinding down at one end; a number of small arrowheads, some of chert, some of chalcedony, one very neatly made, only .4 of inch in length.

To our disappointment considerable digging in this field yielded no sign of burial, and it became evident that the dark soil showing former occupancy was of little depth in places, while in others it had entirely disappeared. The field, on a slope, probably had lost by long cultivation and wash of rain, the cemetery that presumably once was there.

Mounds at the Boone Place, Calhoun County, Ark.

At the Boone Place, which has a landing that takes its name from the place, is a mound with an exposed section on the river's bank, a part having been eaten away by the stream.

A photograph of this mound, shown in half-tone reproduction in Fig. 91, illustrates a point to which we have before referred, namely, the inability to give any idea of the height of a mound by the aid of photography, this mound being 12.5 feet above the surrounding level ground.

The picture shows the base line, which was the original surface, running through the mound. The base-line can be seen at the extreme right of the picture, extending below the level ground.

The mound in question, with five others, all domiciliary in appearance, having broad, flat tops, forms an irregular circle or an ellipse.

Many trial-holes were sunk by us into the mound on the river bank without success. The other mounds, however, were not dug into, their owner depending on them as places of refuge for his stock in periods of high water, and fearing that any digging might loosen them in a way to make them less likely to resist the inroads of the river.

FIG. 91.—Mound. Boone Place.

The low-lying ground surrounding the mounds, dry swamp at the time of our visit, but often submerged, was inspected by us and was dug into to a limited extent. But as the soil seemed to be late river deposit, and in addition was covered thickly with dead leaves, we were unable to find any indication of aboriginal burial, and the idea of digging at random over so considerable an area was not entertained.

Mounds on the Keller Place, Calhoun County, Ark.

About 300 yards N. by E. from Keller Place Landing, in woods but in sight from the road, is a mound (A) which has been quadrangular. Its height is 13 feet. The diameters of base are 131 feet and 143 feet; and of the summit-plateau, 62 feet and 72 feet.

As this mound evidently was domiciliary, digging into it was confined to the summit-plateau, in an unsuccessful attempt to discover a cemetery there.

In woods, about 175 yards N. by W. from Mound A, was a very symmetrical mound (B) with circular base having a diameter of 52 feet. The summit, also circular, was 19 feet in diameter.

The height of this mound, taken from the level of surrounding territory, slightly exceeded 7 feet. Later, a measurement from about the middle of the summit to what seemed to be undisturbed sand at the base of the mound, showed a depth of 9.5 feet. Presumably there had been a superficial deposit of mold and of sand on the area surrounding the mound, thus diminishing the height.

This mound was completely dug away by us to a depth slightly less than 10 feet from its top, except a very limited portion around a tree at the margin of the mound, which was left standing.

The mound, in which trial-holes came at once upon human remains, was composed mainly of sand containing an admixture of clay—a small proportion in the upper part. In the lower central part, however, the percentage of clay increased until toward the base of the mound the material was almost wholly clay.

Human remains were encountered throughout the mound, beginning almost at the margin, at various depths, from well up toward the summit to the base and even below it.

Skeletal remains in this mound were so badly decayed that even in the burials best preserved only crumbling fragments of the larger bones or of teeth remained. Not a trace of vertebra, small bone, or rib (with a single exception to be noted later), or of the articular parts of any bones was encountered throughout the entire mound. Most frequently skulls represented by decaying fragments of bone or by remains of teeth, were all that remained of the burials.

Fifty-two skulls or traces of skulls were met with in the mound, but as it was customary in this region to bury earthenware vessels near the skull, and as a number of vessels were found apart from human remains, presumably some skulls had entirely disappeared, and hence the original number of burials had been in excess of the number of skulls given in our enumeration.

A small deposit of fragments of bones, all split, none human, lay at a considerable depth in the mound.

Other than earthenware vessels, few artifacts were encountered. A barbed arrowhead and an arrowhead or knife, both of chert, came from the mound, as did a disk, wrought from the base of an earthenware vessel, 3 inches in diameter, with a central perforation.

There were found also a chisel wrought from a chert pebble, about 6 inches in length, having part of the side and edge broken away, and two chisels together, one about 3 inches in length, the other somewhat less, each made from a pebble of chert and having a well ground, convex, cutting edge.

Among the roots of a tree growing from the mound, which were being cut for removal, was a pipe of earthenware of interesting form, the bowl of which received a blow from an axe, but since has been cemented together. The part of the pipe on which the bowl rests is square in section where the stem is intended to enter, and tapers to a blunt point at the other end. The decoration consists of notches on the four edges of this elongated pyramid; incised, encircling lines at both ends; and on two opposite sides below the bowl, rude circles in low relief on an excised field—seven circles on one side and nine on the other (Fig. 92).

FIG. 92.—Pipe of earthenware. Keller Place. (Full size.)

FIG. 93.—Copper-coated ornament of wood. Keller Place. (Full size.)

Near the central part of the base of the mound lay Burial No. 58, consisting of fragments of teeth and a small, flat remnant of bone, probably part of a rib. This fragment had been preserved by the sheet-copper covering of a hollow wooden ornament that lay upon it at such a distance below the teeth as to indicate that its position had been on the chest of the deceased (Fig. 93). This ornament was made in two parts and hollowed out to contain pebbles (which were present in it) to rattle when the object was in motion. The shape of the object when entire is that of the canine tooth of a large carnivore, which, doubtless, it was intended to represent. There is a hole for suspension at one end.

In a stone-grave on a bluff of the Big Harpeth river, Tenn., were found by the late Mr. Edwin Curtis, while conducting explorations under the direction of Prof. F. W. Putnam, two ornaments almost exactly similar to the one in question. These ornaments have been figured and minutely described by Professor Putnam,[1] who believes them to have been ear-ornaments.

[1] Reports Peabody Museum, Vol. III, p. 112 *et seq.*

Fifty-two vessels of earthenware, nearly all of which were badly crushed, were taken from this mound. These vessels were found near crania or else apart from bones—singly, in pairs, and in one case three together.

The ware, without shell-tempering, save in the case of a single sherd, is inferior in quality; the decoration is commonplace as a rule and the patterns lack originality.

Certain of the vessels from this mound are described in detail.

Fig. 94.—Vessel No. 3. Keller Place. (Height 5.1 inches.)

Vessel No. 3. A bottle of compound form (Fig. 94), of inferior ware, rudely modeled. Incised line decoration on the upper part of the body has been attempted, but abandoned almost immediately after inception.

Vessel No. 33. A pot 3 inches in diameter, of brown ware, having a flat base and a short upright neck from which extends horizontally a scalloped margin. The interest in this little vessel is centered in its decoration, which four times shows (Diagram Fig. 95) a symbol, the significance of which is in doubt. This symbol, a familiar one on pottery from parts of Alabama and on stone and on pottery from Arkansas, appears on this vessel in two instances with the poles of the elliptical figure vertical and the interior portion horizontal—the manner in which the symbol usually is represented. In two cases, however, the position of the poles and that of the interior parts are reversed.

Vessel No. 5. A pot of dark ware (Fig. 96), with flat base and slightly flaring neck. Around the rim are imprints showing short, parallel lines. Five vertical rows, each consisting of six protuberances, divide the upper part of the exterior

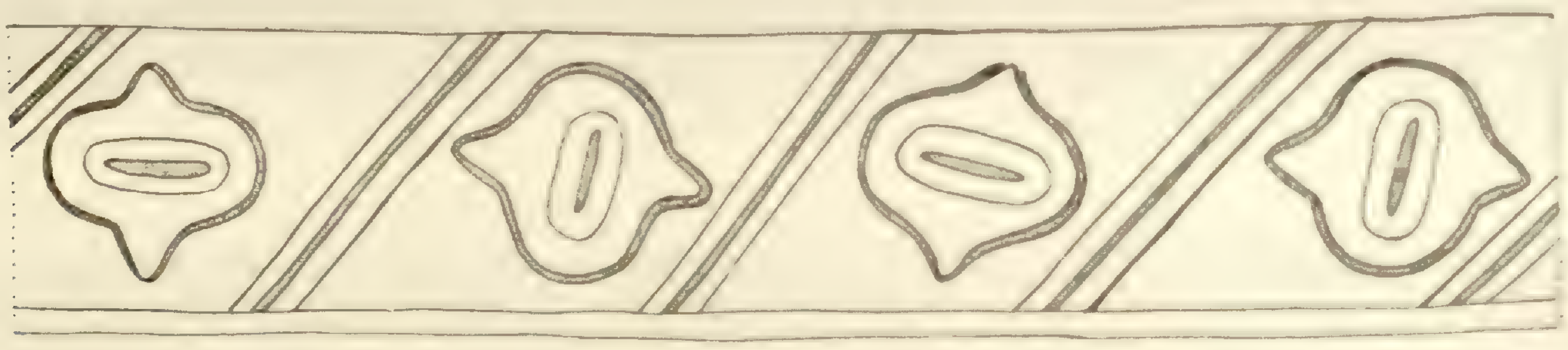


Fig. 95.—Vessel No. 33. Decoration. (About half size.)

of the body into five equal parts, which are filled with decoration of oblique, parallel lines conferred with a tool, though the effect is similar to cord-marking.

Vessel No. 40. This bottle, of dark, inferior ware, (Fig. 97), is without decoration and is shown on account of its rather graceful form.

FIG. 96.—Vessel No. 5. Keller Place. (Diam. 4.9 inches.)

FIG. 97.—Vessel No. 40. Keller Place. (Height 6.2 inches.)

Vessels Nos. 30, 49, and 43. Three bowls, in diameter, respectively, 7.5 inches, 5.6 inches, 4.7 inches. Each bowl, inside and out, is coated with red pigment, and each has a number of incised, parallel, encircling lines below the rim—these lines, in the case of Vessel No. 49, the one of medium size, being interrupted on two opposite sides by series of five incised, festooned lines extending below rudimentary handles, on the top of each of which are two straight, impressed markings, each about .5 inch in length.

Vessel No. 25. A bottle of yellow ware (Plate VI), dark in places through uneven firing, with a coating of red pigment, in part worn away. The vessel has a globular body, and a neck distinguished by an unusual feature on long-necked bottles such as this one is, namely, an endeavor to represent an animal head at the opening. This head, a very crude endeavor, has ears, mouth, and nostrils; the eyes are wanting. The decoration of the body, incised in an irregular way, consists of hour-glass-shaped figures made up of series of lines, four times shown.

Across the road from Mound A and in full view from it, is a circular elevation (Mound C) about 40 feet in diameter and from 2 to 3 feet in height, which was practically dug down by us.

Five burials were encountered, all badly decayed, some represented only by fragments of the skull. Three were of children; one, of a child or of an adolescent; one of an adolescent whose wisdom teeth had not yet erupted.

The form of burial where the skeleton was sufficiently complete to indicate it, was at full length on the back.

A neatly-made arrowhead of chert lay apart from burials in this mound, and a pot with rude ornamentation was near the skull of a child.

In woods, about 65 yards NNW. from Mound A is a circular dwelling-site (Mound D) about 2 feet high and 62 feet in diameter.

Eleven trial-holes failed to come upon human remains but resulted in the finding of a pipe of soft claystone, lying alone (Fig. 98), and some bones kindly identified by Prof. F. A. Lucas as having belonged to an Indian dog; and a bone of a turtle, apparently a moderate-sized snapping turtle.

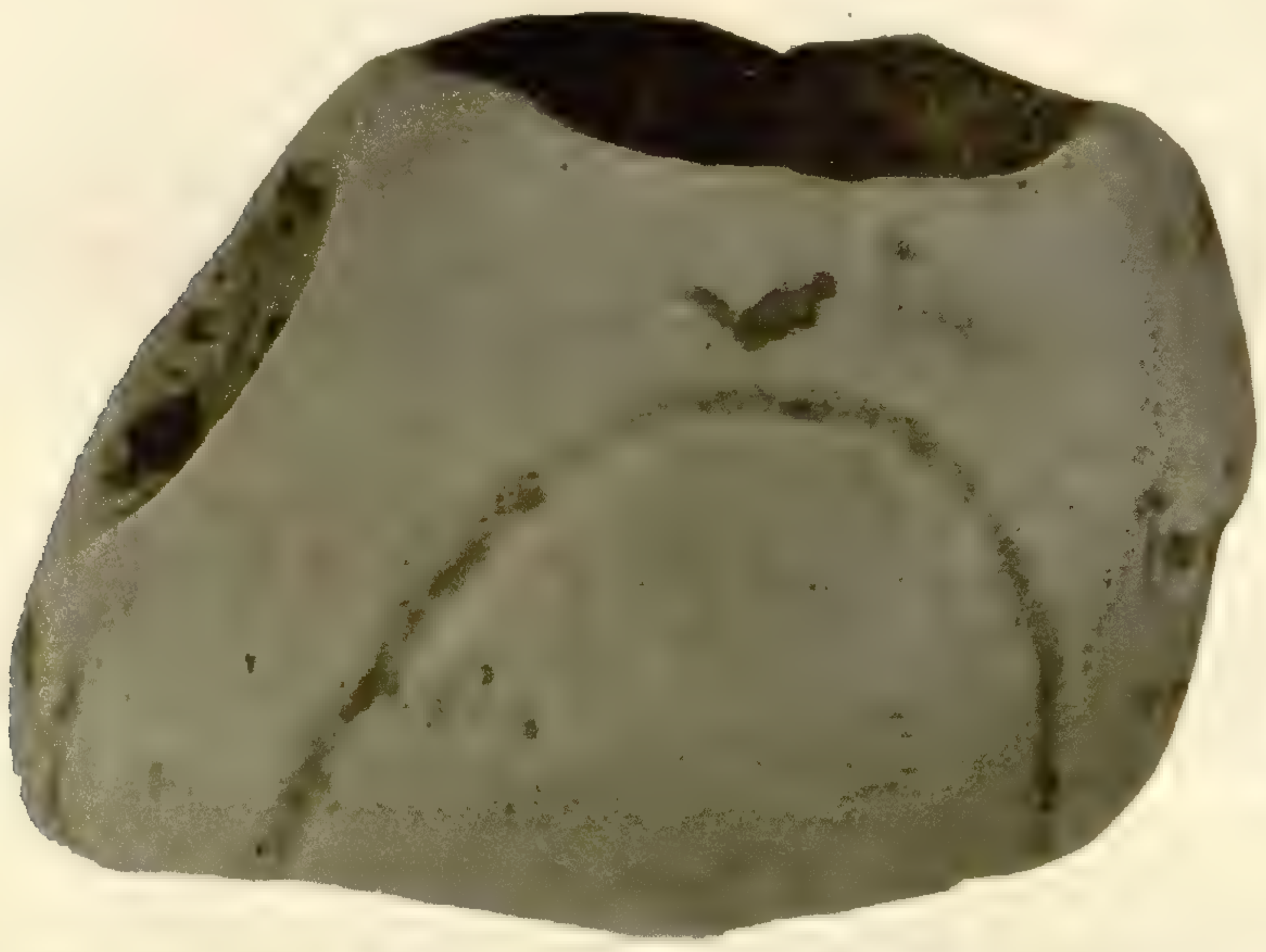


FIG. 98.—Pipe of claystone. Keller Place. (Full size.)

Various series of trial-holes were put down in the level ground and in small circular elevations in the woods, in an endeavor to discover a cemetery, but with slight success.

In one place human remains were four times encountered, but considerable digging in their vicinity was without return. With one of these burials was a small arrowpoint of black chert.

ANTIQUITIES OF THE OUACHITA VALLEY.
KELLER PLACE, VESSEL NO. 25. (HEIGHT, 12 INCHES.)

COCKAYNE, BOSTON.

Mound and Sites near Pyle's Landing, Calhoun County, Ark.

About one-quarter mile in a northerly direction from Pyle's Landing, in a field formerly under cultivation but untilled at the time of our visit, is a symmetrical mound with a circular base, 7 feet 6 inches in height and 80 feet in diameter. The summit-plateau, also circular, is 34 feet across.

As this mound evidently was domiciliary and is said to be the only refuge for stock in times of overflow, we contented ourselves with a number of trial-holes dug into the summit-plateau, which, beyond showing the mound to be of clay with a slight admixture of sand in that part, were without result.

A number of trial-holes were put down by us in the field surrounding the mound, but without success—a result anticipated by us, as this locality is said to be several feet under water each flood season.

Mound and Cemetery at Kent, Ouachita County, Ark.

In sight of the railroad station at Kent, about two miles above Camden, on property of the Barlow and Kent Company, of Urbana, Ohio, is a quadrangular mound having modern burials in its summit-plateau. This mound, 18 feet 6 inches in height, somewhat irregular in outline through wash of rain, probably at the time of its building was square as to its base and summit-plateau, which at present have diameters respectively of 147 feet and 66 feet.

The sides practically face the cardinal points.

The surrounding area is said to have been long under cultivation, and a tombstone on the mound marks a decease in 1852. At present, however, there is a growth of timber over most of the place.

No attempt was made by us to excavate the mound, which was evidently domiciliary, but as there was knowledge of several aboriginal burials discovered while digging preparatory to the erection of sheds (which are in sight from the mound) for the shelter of stock, we decided to dig in the barnyard, and found one skeleton there.

Immediately south of this barnyard, however, burials were more plentiful, forty-four being found in a comparatively small area, while two others were unearthed near the boiler-house belonging to the Company, which is at some distance from the sheds.

Owing to the previous cultivation of the ground, no doubt, the burials lay near the surface, the deepest being but 15 inches down, and most of them less than one foot in depth.

The condition of the bones was such, through decay, that many evidently had entirely disappeared, and although in some cases skeletons were in place when found, the bones crumbled into minute fragments upon removal. There had been also aboriginal disturbance, grave cutting through grave, and much recent interference through contact with the plow. However, in cases where there remained enough of the skeleton for determination, burial at full length on the back was indicated.

Of twenty-four burials which surely came under the foregoing class, all but two had the heads in an easterly direction—not due east, but easterly. In the two exceptions the skulls were directed N. of W. and WNW.

Little but earthenware was found with the dead. Near the leg-bone of a skeleton were two musselshells, and immediately at the skull of the same skeleton was another—all broken. Each of these shells had a central, circular perforation for the admission of a handle, and doubtless was used as a hoe or scraper.

At the right shoulder of an extended skeleton were two knives and six small arrowpoints, of chert; and a small projectile point of the same material lay near the skull of another skeleton.

A skull belonging to a disturbed skeleton had, in close association, a slender, barbed arrowpoint of chert. Chert pebbles and parts of pebbles, seemingly intentionally placed, were found near bones in several instances.

Fig. 99.—Pipe of earthenware. Kent. (Full size.)

Apparently apart from human remains were a number of fragments of earthenware which, when cemented together, formed the bowl of a pipe with a curious loop attachment (Fig. 99). In the base of the bowl are two perforations, each of which connects with the passage intended for the stem, in place of the single perforation usually present.

The proportion of vessels placed with the dead in the cemetery at Kent was comparatively small, but fourteen being found. All these but one were crushed by pressure of the soil, or partly plowed away, or shattered by the spades of our diggers.

Incidentally, it may be said, in reference to breaking of vessels in digging, that the better the condition of the bones, the greater is the number of vessels recovered intact. This may be easily understood when we recall that all bones are carefully removed by hand, and if any part of a well-preserved skeleton, except the skull (near which vessels usually are found), is encountered first by the digger, vessels with the skeleton are exposed to but little risk in removal.

Of the fourteen vessels found at Kent, all but one lay near skulls or parts of skulls—the exception being a bowl found near the pelvis of an extended skeleton.

In one instance a bottle and a bowl lay with a skeleton; all other vessels were found singly. Several bowls were inverted.

The earthenware from Kent is tempered with sand, is fairly good in quality, and in several instances is black and polished. But one vessel is without decoration, all others having incised markings, none of which, however, is of especial interest. One vessel, badly broken by contact with a plow, had borne a coating of red paint, in addition to a decoration consisting of a number of incised, encircling, parallel lines. The more noteworthy vessels are described in detail.

Vessel No. 7, a bowl of black ware, 5.5 inches in maximum diameter, has a conventional tail 4.5 inches in length, and about one inch in width, projecting at

a right angle below the rim. On the opposite side is a circular area where a head (probably that of a bird) has been. Additional decoration consists of five evenly made trailed lines encircling the vessel below the rim, except where the lines curve down and around the spaces devoted to the head and the tail. In these lines has been a thick deposit of red pigment, which still remains in places.

Vessel No. 1. A bottle of porous, dark ware (Fig. 100), with a flat base and a rudely incised decoration.

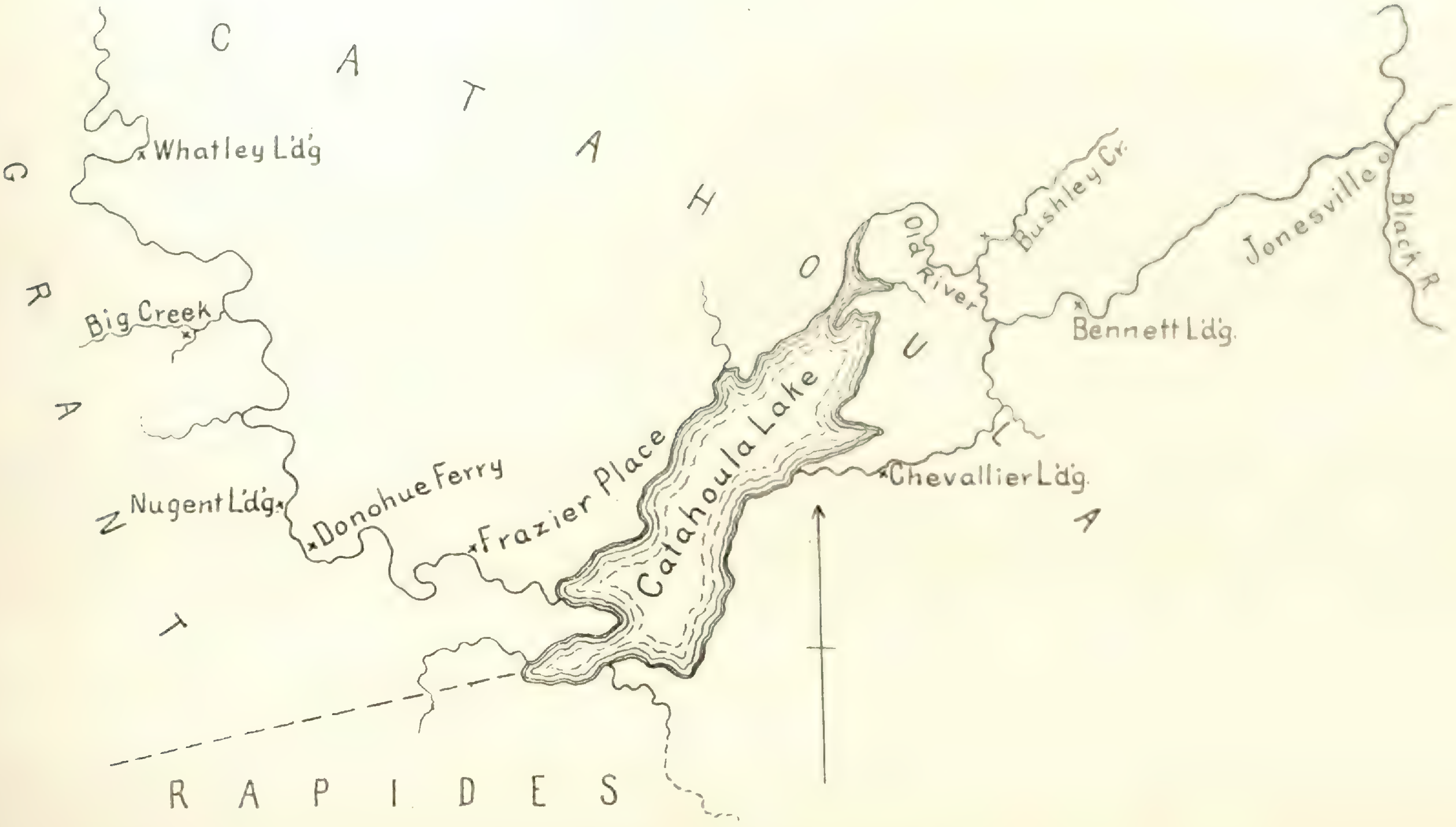
Vessel No. 13. A bottle of good, dark ware, from which, unfortunately, the neck has been plowed away and lost (Fig. 101). The shape is somewhat unusual, as is the decoration, which consists of incised designs and modeled bands in relief.

FIG. 100.—Vessel No. 1. Kent. (Height 7.9 inches.)

FIG. 101.—Vessel No. 13. Kent. (Diam. 7 inches.)

FIG. 102.—Vessel No. 8. Kent. (Height 6.4 inches.)

Vessel No. 8. A bottle of black ware (Fig. 102), having a flat base and a neck of unusual form. The body has, as decoration, four times shown, series of circles concentric around a dot, with dentate markings extending from the outer circles—presumably sun-symbols. Minor features in the decoration are cross-hatched spaces between the symbols; incised encircling lines above them; and other encircling lines on the terminal portion of the neck, where, in addition, are four equidistant, vertical fillets ornamented with parallel, incised lines on the upper surfaces.



MAP OF PART OF LITTLE RIVER
Scale in miles
0 5 10
1909

LITTLE RIVER.

Little river, as we have said, is navigable to Georgetown, a distance of about 85 miles by water. The portion covered by us was somewhat less.

The navigable part of this stream was carefully searched in advance by our agents.

The territory along that part of Little river visited by us is nearly all subject to overflow, and not one cultivated field along its banks was seen by us which indicated the presence of a cemetery, either by a dark appearance of the soil or by debris of aboriginal occupancy scattered on the surface.

MOUNDS.

Mounds at Bennett Landing, Catahoula Parish, La.
Mounds on Bushley Creek, Catahoula Parish, La.
Mound near Chevallier Landing, Catahoula Parish, La.

Mounds on the Frazier Place, Catahoula Parish, La.
Mounds at Donohue Ferry, Catahoula Parish, La.
Mounds at Nugent Landing, Grant Parish, La.
Mounds on Big Creek, Grant Parish, La.
Mound near Whatley Landing, Grant Parish, La.

Mounds at Bennett Landing, Catahoula Parish, La.

At Bennett Landing, in full view from Little river, in a cultivated field, are two mounds of moderate size, formerly quadrangular, but now much eroded by wash of rain, and, as to their lower parts probably by the river in time of overflow.

Permission to investigate these mounds was accorded, and later withdrawn. The mounds, judging from their outlines and summit-plateaus, belong to the domiciliary class. There is no history of the finding of bones or of artifacts in or near them.

Mounds on Bushley Creek, Catahoula Parish, La.

At the junction of Bushley Creek with Old river, is a landing. About three-quarters of a mile NNW. from this landing is a large field, long fallow, the property of Messrs. H. & C. Newman, of New Orleans, to whom we are indebted also for permission to investigate their property on the Ouachita river.

In this field are a number of mounds and rises in the ground, and the surface contains much evidence of former occupancy by aborigines.

The principal mound (A), much trampled by cattle, a refuge for which it is in periods of overflow, has a present height of 6 feet; the diameter of its circular base, which evidently has been much extended, is 80 feet.

Ten trial-holes sunk into this mound showed it to be mostly of hard clay with an admixture of sand in places.

Human remains, all badly decayed, were found in four of the holes, consisting of fragments in two places; a skull; and a bunched burial.

In another trial-hole, in which no bones were apparent, was a small, undecorated pot having a square, flat base. With it were parts of another vessel.

As neither bones nor earthenware were met with at a depth greater than one foot, it was evident that burials in this mound had been made superficially.

About 115 yards N. by E. from Mound A is another mound (B), which in the past has had a house upon it, and is greatly dug and washed away. It is covered with fragments of chert, among which were parts of several human bones. On the W. side, adjacent to the mound, has been a garden, around which, except along the part which abuts upon the mound, is a small embankment, or levee, of the same period as the house, to protect the garden in periods of high water.

This mound, about 5 feet high from the S., N., and W., is of much greater height on the eastern side, where, seemingly, the surface of the field has been washed away by the creek.

About 40 yards ENE. from this mound is a pool marking the area whence the earth for the mound was taken.

In addition to careful examination of the sides of a large hole, which was already in the mound, we did considerable digging, but without success.

Careful search also was made over all this promising looking field, and many trial-holes were put down, but without avail.

Mound near Chevallier Landing, Catahoula Parish, La.

About half a mile in a southeasterly direction from the landing, on the Chevallier Place, which is the property of Mr. D. D. Chevallier, living nearby, in sight from the landing, is a mound, much of which has been washed away by rain, leaving sections that expose raw-looking clay, but no bones or artifacts. The height of the mound is 21 feet.

Digging into what remained of the summit-plateau brought no return, and trial-holes in the adjacent woods and fields yielded no sign of a place of burial.

Mounds on the Frazier Place, Catahoula Parish, La.

About four miles up Little river, after passing through Lake Catahoula, is the Frazier Place, the residence of Mr. L. D. Frazier.

In full view from the river's bank is a fine mound, about 12 feet high measured from the NW., where the ground is high, or more than 16 feet in height when the measurement is taken from the southwestern side, which is about the general level.

The mound, originally a truncated cone, has a basal diameter of 90 feet. It has been somewhat washed away by rain, and has undergone considerable digging in places.

Various parts of the mound were dug into by us, including an excavation 10 feet by 9 feet in the summit-plateau, which yielded a full-length burial, two single skulls, and a bunch of bones without a skull. All these bones were badly decayed. No burials occured at a greater depth than 1.5 feet, where raw-looking clay was encountered. As we considered the mound to be of the domiciliary kind, with superficial burials, digging was discontinued at a depth of between 3 and 4 feet.

In a cultivated field is a curious platform of earth, of remarkable symmetry, about 150 yards N. by W. from the large mound. The height of this mound in the field is approximately from 2 to 4 feet, depending on the slope of that part of the field whence measurement is taken. It is almost square, with a diameter of 95 feet, the diameter of the summit-plateau being about 75 feet.

There is no exact orientation to this curious mound, which, perhaps, was the first stage in the building of a greater one, the sides being approximately N. by E. and S. by W., and E. by S. and W. by N.

Considerable digging into this mound in the hope of discovering a cemetery, proved fruitless.

Mounds at Donohue Ferry, Catahoula Parish, La.

On the crest of a ridge overlooking Donohue Ferry, about 300 yards in an easterly direction from the ferry, on property of Mrs. Blanche Walker, of Jackson, La., is a very symmetrical mound, a truncated cone in form, whose dimensions are hard to determine, it being almost impossible to decide where a ridge upon which it stands comes to an end and where the mound begins.

Taken from the S. the mound has a height of 12 feet and a basal diameter of 80 feet; and these measurements will probably answer as well as any others, though the question of the size of the mound must be entirely a matter of individual opinion. At all events, the dimensions cannot be smaller than those given. The diameter of the summit-plateau is 15 feet.

Cropping from the sides of the mound are masses of sandstone, and our digging into the summit and sides came upon similar masses, and nothing else.

A few feet from the large mound was another, 1 foot 9 inches in height and 29 feet in diameter of base. A trench 20 feet long by 6 feet across, running through the center of the mound, was put down to a depth extending below the base, without result, except the discovery of masses of sandstone, smaller than those in the larger mound.

Mounds at Nugent Landing, Grant Parish, La.

In woods, on land belonging to the State, near Nugent Landing, are various low, circular mounds; a mound that had been dug through previous to our visit; and a quadrangular mound, probably domiciliary, about 7 feet in height. Several of these mounds, including the one last referred to, were dug into by us without success.

Fig. 103.—Earthenware vessel. Nugent Landing. (Height 3.4 inches.)

In a cleared space, in full view from the landing, is a low, irregular mound, composed of very dark soil, evidently a dwelling-site.

Thirteen trial-holes sunk in this site yielded human remains in three places, all near together. Considerable space surrounding these holes was then dug out, exposing other burials, making a total of three skeletons at full length on the back, one being without bones from the knees down; and eight skulls lying among fragments of bones. None of these burials, all of which were badly decayed, lay at a depth greater than 20 inches.

Near one of the skulls was a curious little vessel of earthenware, shown in Fig. 103, and fragments of another vessel of rude design. With these were three flat pebbles, one round in outline and two oblong with rounded corners.

Mounds on Big Creek, Grant Parish, La.

On a nameless point extending into Big creek, about one mile above its union with Little river, on the left hand side going up, in view from the water, is a mound about 1.5 feet high and 40 feet across the base. Six trial-holes showed the mound to be of closely-packed sandy clay. Indications of single skulls with fragments of long-bones near them were found in two places. Near one of the skulls was a bowl of inferior ware, in many fragments.

Investigation of other low mounds at this place was without success.

Mound near Whatley Landing, Grant Parish, La.

In woods, about 100 yards in from the water, about one mile above Whatley Landing,[1] on property of Mr. A. A. Whatley, is a mound about 4 feet in height, irregularly elliptical in shape, with basal diameters of 125 feet and 83 feet; and corresponding diameters of summit-plateau of 104 feet and 55 feet. Beyond showing the mound to be composed of clayey sand, eleven trial-holes were without result.

At this point we decided to abandon work on Little river.

BOEUF RIVER.

The investigation of Boeuf river, which was not searched for us in advance by our agent, as we have said before, was abandoned by us at Alto, 100 miles[2] by water from the river's mouth, though the stream is navigable 50 miles further.

The land bordering Boeuf river is low-lying, except in places, until Landerneau is reached (see map), after which the banks are somewhat higher.

MOUNDS AND SITES.[3]

Cemetery near Jones Landing, Franklin Parish, La.
Mounds near Dailey Landing, Franklin Parish, La.
Mounds near White Oak Landing, Franklin Parish, La.
Mound at Alabama Landing, Richland Parish, La.

Cemetery at Jones Landing, Franklin Parish, La.

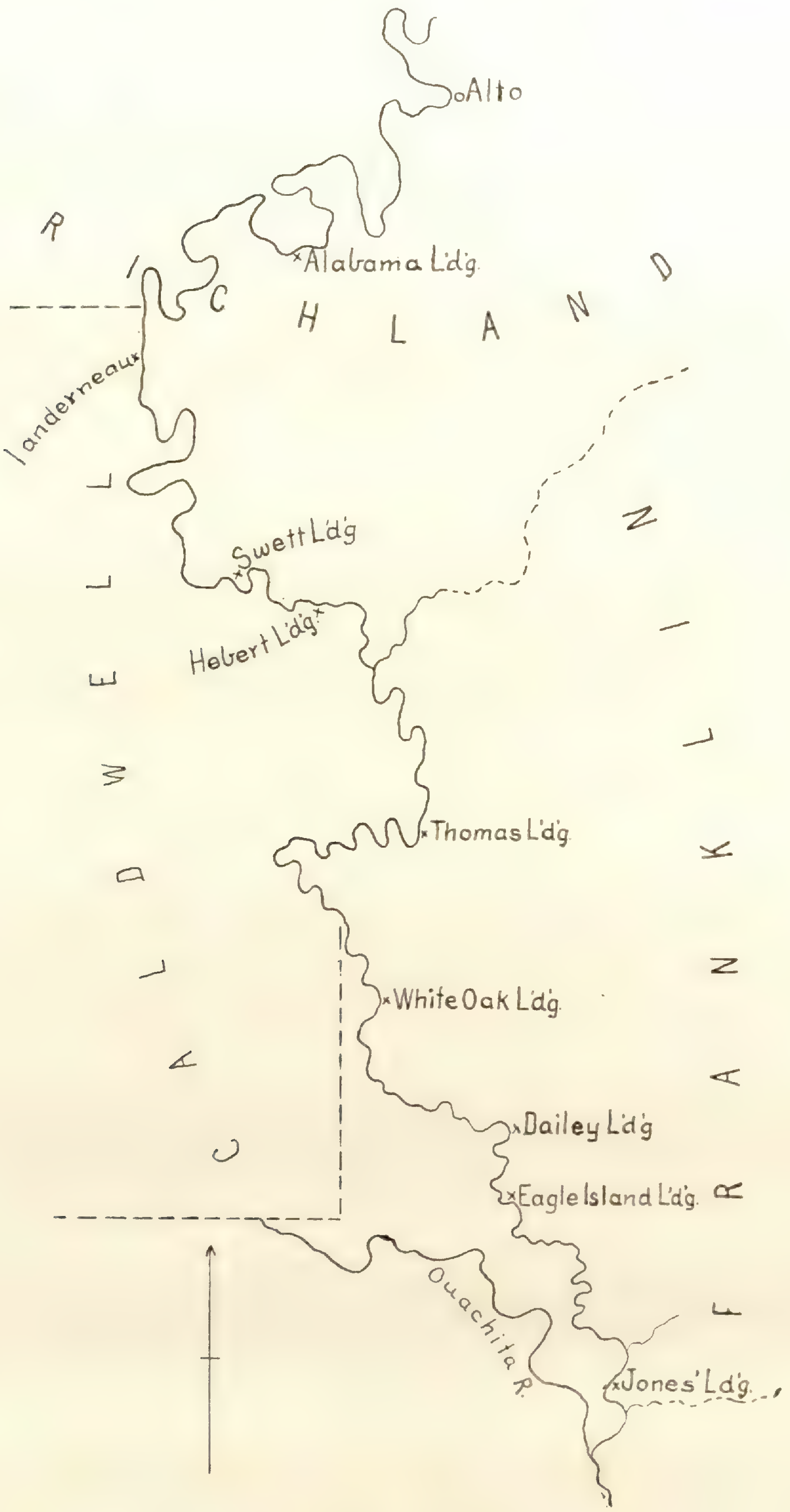
At Jones Landing is a large plantation belonging to Mr. L. Herbert Swayze, who resides there.

[1] The landing is on the opposite side of the river, in Catahoula Parish.

[2] All information as to distance to towns and as to navigable length of rivers, mentioned in this report, has been furnished us from surveys by the United States Engineer Department having supervision of these streams.

[3] Only mounds noteworthy on account of size and shape, and mounds or sites in which human remains were found, are described in our account of the antiquities of Boeuf river.

Single mounds or groups of mounds are at or near: Eagle Island Landing, on the Desha Place; Thomas Landing, on the Bush Place; Hebert Landing, on the Hebert Place; Swett Landing, on State land.



MAP OF PART OF BOEUF RIVER

Scale in miles

0 5 10

1909

Surrounded by cultivated land, on Mr. Swayze's place, are two mounds, low and much spread, on one of which is a dwelling, while the other is occupied by a cemetery containing recent burials. Both these mounds, which had the appearance of having been domiciliary in character, though, at the time of our visit, they had lost all definite form, were dug into by us without success.

Near the mound in which are the recent burials is a pool of water which marks the area whence material for the mound was taken. This pool is nearly surrounded by small, circular dwelling-sites.

The entire plantation was carefully examined by us, with the result that a slight rise in the ground was noted about half a mile SE. from the landing, at the extreme SW. end of the plantation. This elevation, perhaps one foot in height, was of much darker soil than the surrounding plantation, and fragments of human bone lay in furrows made by recent plowing.

Trial-holes at once exposed human remains, and additional digging showed burials in that part of the elevation which was in the plowed field (a part of it, not a large proportion seemingly, was in a cultivated garden beyond a fence) mainly to be confined to an area 20 feet by 30 feet in extent. This area was dug throughout by us at a depth of from a foot to 2 feet, where undisturbed clay was encountered.

Human remains were found in great abundance, but in a poor state of preservation, only two skulls, both broken, and several bones exhibiting pathological conditions being saved.

In certain cases burial at full length on the back was noted; in others, the deposit of skulls and scattered bones. In one instance five skulls lay together.

The yield of artifacts was disappointing.

Placed on the chest of an extended skeleton was the base of an earthenware vessel, lying too deep to have lost its upper part through the agency of a plow.

With scattered human remains, and near the surface, was another base of a vessel.

Also with human bones were several bits of chert and part of a small disk of stone.

An extended skeleton had on one side of the skull a pot of shell-tempered ware, in fragments, roughly decorated; and on the other side a small undecorated bowl. Near the pot were several broken pebbles of chert; within the bowl was a chert fragment.

Another extended skeleton had at the neck sixteen shell beads, roughly barrel-shaped, each about one-third of an inch in length.

A part of a short-necked bottle, the remainder apparently having been carried away by a plow, lay with fragmentary human remains. The decoration of this vessel, neatly executed, had been a scroll combination partly filled in with cross-hatch lines. The ware, though not shell-tempered, is excellent, and the outline of the vessel, when whole, must have been graceful.

Near scattered bones were fragments of an undecorated vessel, and in two instances vessels crudely decorated, with globular bodies and flaring necks, lay near skulls.

Near another skull was half of a pot bearing a coarse, lined decoration.

The yield from the portion of this cemetery investigated by us was not of a nature to encourage us to negotiate with an aged colored man, into whose garden the remainder of the cemetery extended, for the right to continue the search.

On a plantation adjoining that of Mr. Swayze we failed to find bones on the surface, or soil of a color to encourage us to dig, though scattered amid much chert debris were a small, pointed implement of bone, and a piercing implement 2.75 inches in length, made by grinding to a point at its narrower end a chert pebble so shaped as admirably to adapt it to the purpose.

A number of arrowheads of chert were found on this plantation, as well as on the one belonging to Mr. Swayze.

Mounds near Dailey Landing, Franklin Parish, La.

About 300 yards W. by S. from Dailey Landing, in a cultivated field forming part of the plantation of Mr. M. P. Dailey, who lives on it, is a mound (A) 14 feet high, with an irregularly circular base 146 feet in diameter. The diameter of the summit-plateau is 47 feet. The upper part of this mound, to a depth of from 2 to 2.5 feet, is of rather loose material and is much darker in shade than the solid and tenacious clay beneath it.

Eight trial-holes were put down in the superficial part of the mound, some of which, coming upon human remains, subsequently were enlarged. Digging was not carried farther, as the mounds on Mr. Dailey's place are his sole reliance in flood-time as a place of refuge for stock, hence digging and a consequent loosening of soil and destruction of roots which hold it in place, meant impairment to the mound; moreover the yield of artifacts was not of an alluring character.

One skeleton extended on the back and six bunched burials were encountered at a maximum depth of 2.5 feet. With one of the bunched burials were three skulls; with another, were two.

All bones were badly decayed.

With burials were six earthenware vessels near crania; in one instance a pair, the rest occurring singly. These vessels, all of which were broken, show no shell-tempering and are undecorated, with a single exception which bears a simple design of straight lines, roughly made. The vessels present no novelty in form.

About 250 yards NNE. from Mound A is a somewhat smaller mound (B), which has suffered considerably through wash of water. Its summit-plateau was of hard, undisturbed clay, light in color.

This mound yielded nothing to our search, nor was it expected that it would do so.

About 80 yards SSE. from Mound A is another mound, much spread through cultivation, which was planted in cotton at the time of our visit. The soil is rich

with admixture of organic matter, but the depth to which this loam extends is little more than one foot. Thirteen trial-holes were without result.

Across a small arm that makes in from the river, in a southerly direction from Mound A, is a mound in woods, in which eight trial-holes were sunk without success; and an equal number were put down into neighboring level ground with like result.

Mounds near White Oak Landing, Franklin Parish, La.

About 300 yards above White Oak Landing, on the river bank, on land said to be property of the State, is a mound (A) about one foot in height, and probably circular as to circumference in former times, but somewhat eaten away by the river at the period of our visit, when its diameters were 28 feet and 36 feet.

Eleven trial-holes showed the elevation to be of rich loam, containing occasional fragments of musselshells.

Human remains were found in five places and varied in depth from 6 inches to 2.5 feet. In addition to many scattered bones, there were six skeletons lying at full length on the back, one of which instead of having the arms extended at the sides, had the forearms flexed against the upper arms. All bones were in bad condition, the skulls being in fragments.

The yield of artifacts from this place was not encouraging.

Apart from human remains was half a pebble which had been split longitudinally, with an edge ground at the broader end.

Also away from burials was the larger part of a shell-tempered earthenware vessel which, when whole, had borne as decoration a combination of the scroll.

About 50 yards NE. from the mound on the river bank is a mound from 3 to 5 feet in height, the altitude depending somewhat on the side of the mound whence the measurement is taken. Its circular base has a diameter of 90 feet. Thirteen trial-holes were dug, resulting in the discovery of scattered bones; a bunched burial with three skulls; and three skeletons extended on the back; none more than one foot in depth.

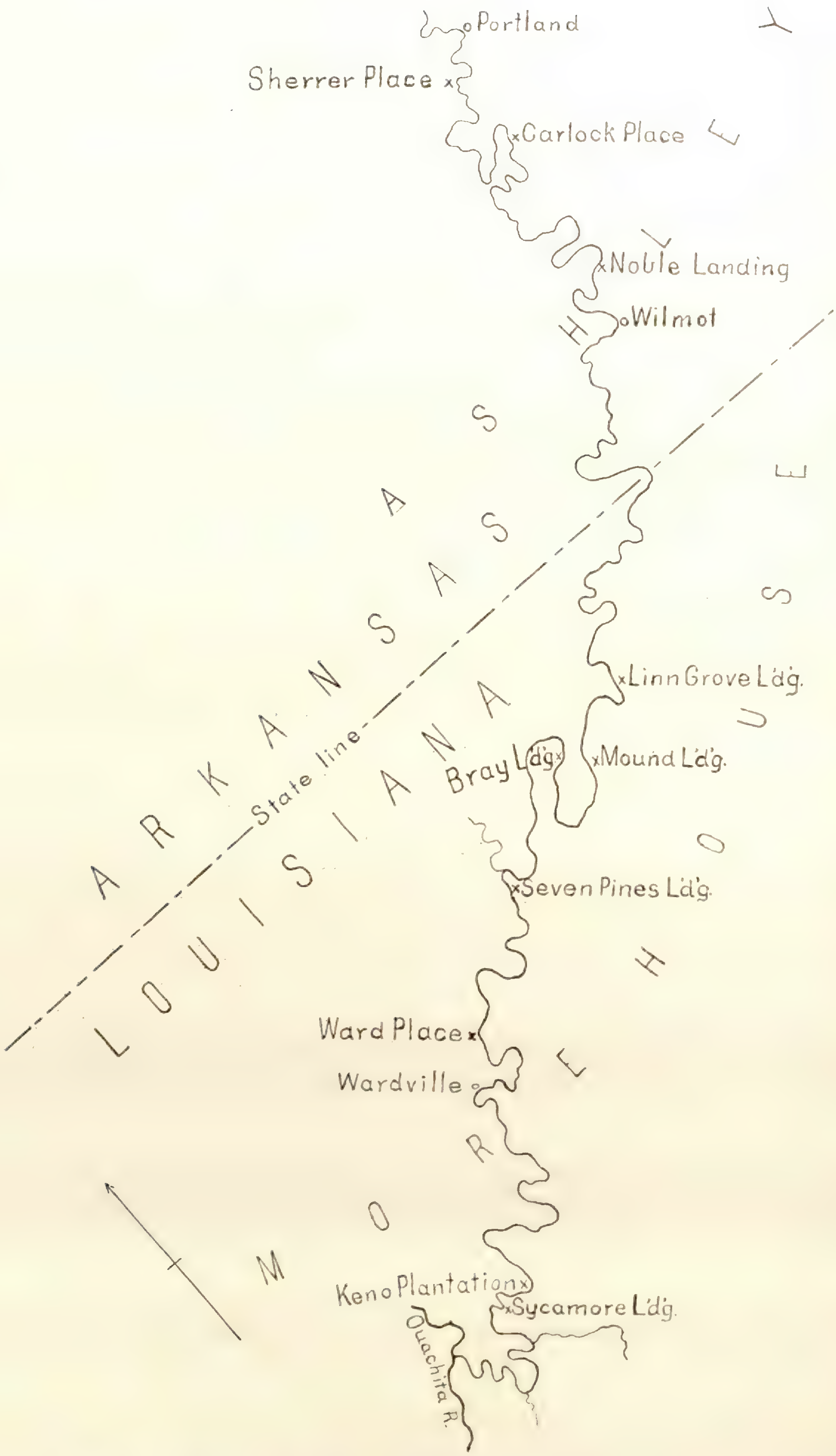
Mound at Alabama Landing, Richland Parish, La.

At Alabama Landing, on property of Mrs. M. E. McIntosh, a road which skirts the river passes through remains of an elevation but little above the surrounding level, in which, we were informed, human bones formerly had been found.

Thirteen trial-holes sunk by us came upon human remains in three places, none at a greater depth than ten inches from the surface. These remains, which were badly decayed, had undergone much disturbance.

A skeleton extended on the back had all bones missing below the knees. At the skull was an arrowhead or knife, of chert.

Three other skulls were found with scattered bones.



MAP OF PART OF BAYOU BARTHOLOMEW

Scale in miles

0 5 10 15

1909

BAYOU BARTHOLOMEW.[1]

Bayou Bartholomew, comparatively deep in the winter season, and narrow so that the traveler on it has the cosy sensation of journeying on a canal, passes throughout between lines of contiguous farms and plantations, all on ground so high that it is almost free from danger of overflow. The bayou escaped the great flood of 1882, though the lower parts of the country bordering it were inundated for a short time in the still greater freshet of 1874, which, however, was due to a special cause.

As we have said, we searched the bayou from its union with the Ouachita to Portland, Arkansas, its navigable length, a distance of 134 miles, by water.

Later, we again carefully investigated the bayou to a point somewhat above the Mound Place, or about half the distance previously covered.

Bayou Bartholomew, as stated in our introductory remarks, was not visited by our agent previous to our coming, but so courteous were the planters and farmers along its banks and so eager to aid us, that our disadvantage through want of advance information was reduced to a minimum.

MOUNDS AND SITES.

Mound near Sycamore Landing, Morehouse Parish, La.
Cemetery near Sycamore Landing, Morehouse Parish, La.
Cemetery on the Keno Plantation, Morehouse Parish, La.
Cemetery on the Ward Place, Morehouse Parish, La.
Cemetery near Seven Pines Landing, Morehouse Parish, La.
Cemetery near Bray Landing, Morehouse Parish, La.
Mound and cemetery on the Mound Place, Morehouse Parish, La.
Cemetery at Linn Grove Landing, Morehouse Parish, La.
Mound near Linn Grove Landing, Morehouse Parish, La.
Mounds near Wilmot, Ashley County, Ark.
Mound at Noble Landing, Ashley County, Ark.
Mounds on the Carlock Place, Ashley County, Ark.
Mound on the Sherrer Place, Ashley County, Ark.
Mound near Portland, Ashley County, Ark.

Mound near Sycamore Landing, Morehouse Parish, La.

About 150 yards E. by N. from Sycamore Landing is a mound with circular base, 11 feet in height and 130 feet in diameter. This mound, which has every appearance of having been plowed over in recent years, seems to belong to the domiciliary class. Its owner was disinclined to permit investigation.

[1] We are unable to say why Bartholomew is called a bayou, and residents along its banks are equally in ignorance as to the explanation. The Saline, rising in Arkansas and joining the Ouachita, as does Bayou Bartholomew, and of no greater size than Bartholomew, is called a river.

Cemetery near Sycamore Landing, Morehouse Parish, La.

At Sycamore Landing is the plantation of Mrs. Clara Barber, whose place of residence is Pine Bluff, Ark. This plantation, under the management of Mr. Clarence Secrease, of Ouachita City, La., adjoins that on which is the mound to which we have referred, and presumably had the cemetery belonging to that mound.

In a cultivated field in the Barber plantation, about 500 yards in a SE. direction from Sycamore Landing, and in sight from the mound, was an imperfectly defined rise above the general level, where the soil was darker than that which surrounded it. On the surface of this elevation were dwelling-site debris and a small fragment of a human skull.

Trial-holes put down at various points in this ground came upon faint traces of bones and several vessels of earthenware.

Finally, as the result of considerable digging, an area 39 feet by 46 feet was determined, in which, seemingly, the burials had been made. This area was dug throughout by us at depths varying between 2 feet and more than 4 feet, according to the distance to which the graves extended.

Traces of human remains were met with in thirty-eight instances, but it was evident from the number of artifacts that lay apart from bones, that many burials had entirely disappeared. Rarely was a fragment of bone met with that did not crumble at the touch. Skulls were mere outlines in the soil, and all that remained of some burials were decaying crowns of teeth.

Burial No. 20, seemingly a bunched burial, in a pit, lay 4 feet 9 inches down, and consisted of traces of three skulls and of remains of long-bones which had been piled lengthwise one upon another.

Burial No. 4, traces of a skull, 3 feet from the surface, had with it three earthenware vessels and a large pipe of limestone or of phosphate rock (reacting to acid), fairly crumbling into bits, evidently a pipe of the effigy class; a small arrowhead of chert; and a small "celt" of a hard stone, which, in common with other "celts" found here, we have not cared to mutilate for a microscopic slide for exact determination, and as to which we do not wish to follow the usual custom and hazard a guess.

Burial No. 8, represented by remains of a skull, which probably belonged to some fragments of decaying bone a short distance from it, lay 22 inches from the surface. With the bones were a pipe of earthenware, a small "celt," and fifty-six arrowpoints of chert, all barbed and acutely pointed. Most of these arrowheads lay in a small heap, a few being scattered nearby. With the arrowheads were three pebbles; one pebble-hammer; and thirteen flakes of chert.

On one side of the skull belonging to this burial was a discoidal of limestone, 4 inches in diameter, with a few badly decayed shell beads upon it.

On the opposite side of the cranium was a pipe of limestone or of phosphate rock, which strikingly represents the head of an eagle, although, unfortunately, the distal, curved end of the beak has crumbled away (Figs. 104, 105). Height, 3.75 inches; maximum width, 3.1 inches; length, 4.5 inches.

FIG. 104.—Pipe of limestone. Sycamore Landing. (Full size.)

FIG. 105.—Pipe of limestone, other side. Sycamore Landing. (Full size.)

The decoration, now somewhat indistinct, is in higher relief on the left side of the head than it is on the right side, where the eye alone is in relief.

This decoration is shown diagrammatically as accurately as it is possible to do under the circumstances (Fig. 106).

The eye represented on this pipe may give a clue to some of the designs on the pottery from this region.

With the pipe was a "celt," 9 inches long, with neatly-made, rounded point opposite the cutting edge.

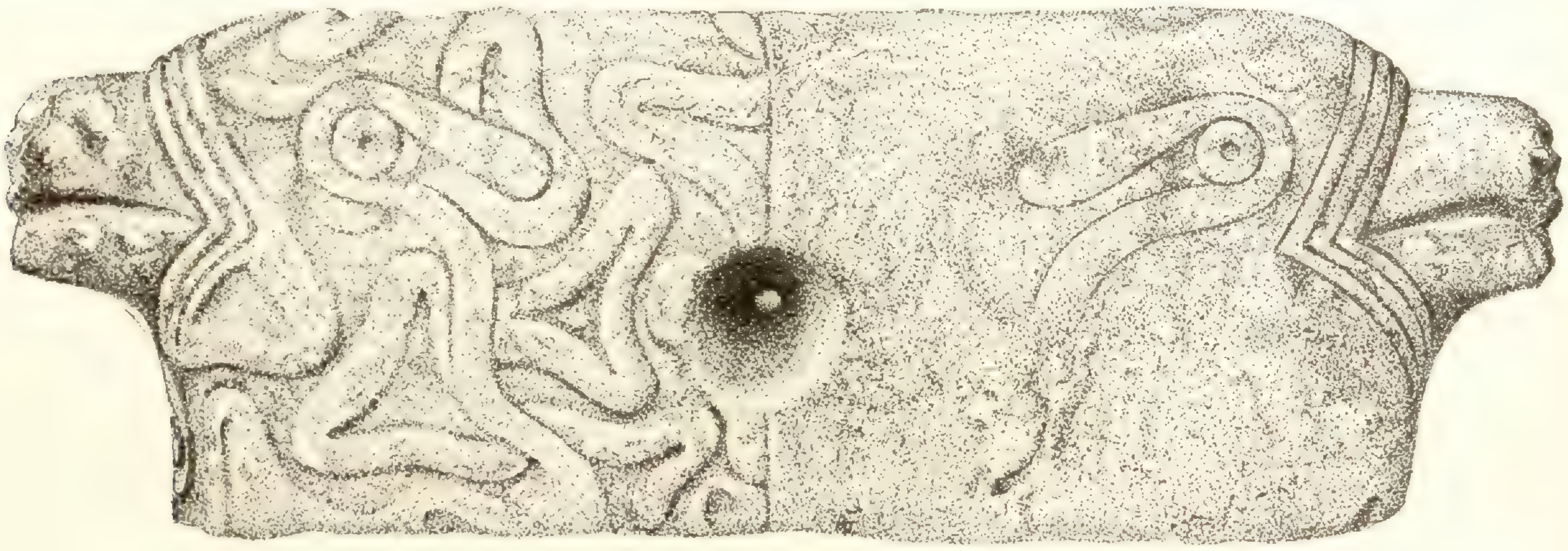


Fig. 106.—Pipe of limestone. Decoration. (About half size.)

Fig. 107.—Pipe of sandstone. Sycamore Landing. (Full size.)

In front of the skull was a pipe of earthenware, and an effigy-pipe of sandstone, 4.2 inches in height, 5.6 inches long, and 2.5 inches in maximum width.

The latter pipe, it is believed, was intended to represent a rabbit, judging from the ears, from the hare-lip, and from the general appearance of the figure (Figs. 107, 108).

On the left side of the pipe (Diagram, Fig. 109) the legs and decoration are represented in low relief. On the right side the legs are in higher relief, and in

Fig. 108.—Pipe of sandstone, other side. Sycamore Landing. (Full size.)

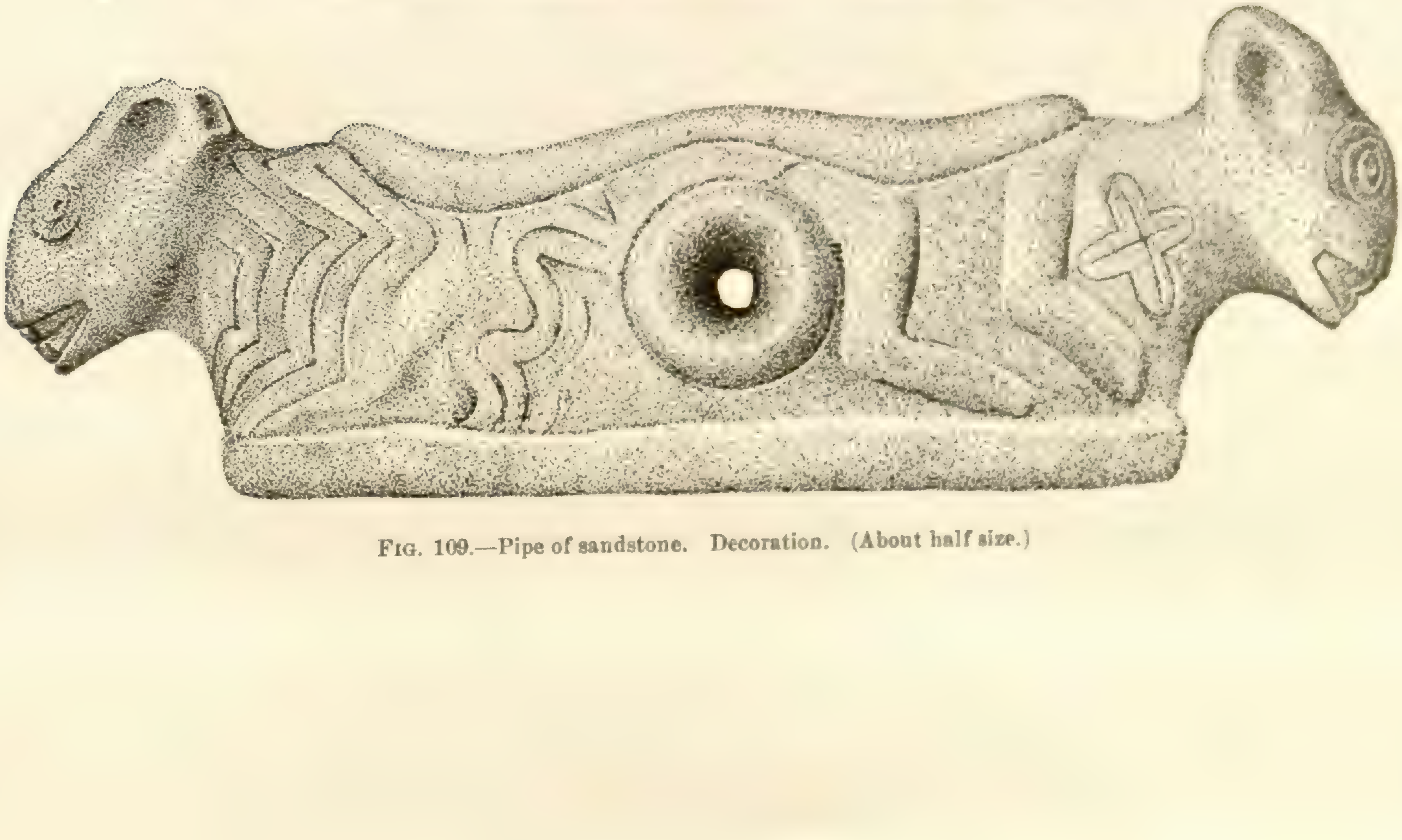


Fig. 109.—Pipe of sandstone. Decoration. (About half size.)

front of the legs is an incised cross of the four directions. This cross and similar emblems shown on other pipes from the Mississippi region call to mind the smoking ceremony described by Charlevoix, in which the smoke was blown first to the sky, then to the earth ("above" and "below"), and then around the horizon, or to the four quarters.

Burial No. 11, a few remnants of teeth, lay in a pit at a depth of 3 feet. With it was a large pipe of limestone or of phosphate rock, which evidently had been an effigy-pipe, but which, on removal, partly came to pieces and scaled to such an extent that its original shape was lost.

Burial No. 17, a mere trace of bone, 3.5 feet down, had with it a bowl of earthenware and a small cube of galena. This galena (lead sulphide) bears a coating of carbonate of lead. Lead carbonate is the white-lead of commerce. It was shown by us in the account of our work at the great pre-Columbian site at Moundville, Ala.,[1] that the white-lead paint found by us on ceremonial palettes of stone could readily have been made by the aborigines by scraping this carbonate deposit from masses of galena (such masses were found in the Moundville graves) and mixing the material with bear-grease.

Burial No. 22, traces of a skull and of teeth, had a small "celt" nearby, and two similar implements of medium size lay singly, apart from burials.

Apart from human remains, but evidently having belonged to a burial that had disappeared, were a bottle and a pipe, of earthenware, and a cube of galena in contact with the pipe, one side of which had been colored by the carbonate deposit on the lead sulphide.

Undoubtedly belonging to a burial that had disappeared through decay, there lay in a little heap fifty-four diminutive arrowpoints wrought from pebbles of chert.

Two discoidals of sandstone, rather roughly made, were found singly with earthenware vessels whose associated burials presumably had disappeared through decay.

Several small arrowpoints of chert lay with burials, and a plummet-shaped object of hematite, broken at the end where the means for attachment had been, was found apart from bones.

In all, eleven tobacco-pipes of earthenware came from this cemetery, many of which lay near human remains and all of which probably had accompanied such remains at one time. Seven of these pipes are shown in Figs. 110 to 116, inclusive. Three of the four pipes not included in the list resemble markedly some of those which are illustrated. The fourth pipe has had projecting at a right angle from the base of the bowl an appendage about an inch in diameter at its base, which was not with the pipe when found, and without which the pipe offers no feature of interest.

Professor Holmes[2] figures a number of pipes from Arkansas, which are similar in type to many found by us along Bayou Bartholomew.

[1] See "Certain Aboriginal Remains of the Black Warrior River," pp. 146, 147. Journ. Acad. Nat. Sci., Phila., Vol. XIII.

[2] Aboriginal Pottery of Eastern United States, 20th Ann. Rep. Bur. Am. Ethn., Plate XXXIII.

FIG. 110.—Pipe of earthenware. Sycamore Landing. (Full size.)

FIG. 111.—Pipe of earthenware. Sycamore Landing. (Full size.)

FIG. 112.—Pipe of earthenware. Sycamore Landing. (Full size.)

FIG. 113.—Pipe of earthenware. Sycamore Landing. (Full size.)

FIG. 114.—Pipe of earthenware. Sycamore Landing. (Full size.)

FIG. 115.—Pipe of earthenware. Sycamore Landing. (Full size.)

FIG. 116.—Pipe of earthenware. Sycamore Landing. (Full size.)

Seventy-eight vessels of earthenware, lying singly, in twos, and threes, and in one case four together, came from this cemetery. In this last instance there were two bowls upright, one within the other, and two others on their sides, one within the other.

Many of the vessels of this place were apart from human remains when found, though unquestionably, in our opinion, they had been deposited with burials.

The pottery from this cemetery, as a rule, is inferior, is without shell-tempering, thick and unevenly fired. Many vessels were hardly more than pasty fragments when found, though, as there was little originality of form or decoration, the loss is not greatly to be regretted. This marked inferiority of ware is of especial interest in connection with this place, inasmuch as Sycamore Landing is in the immediate vicinity of Glendora Plantation and the Keno Place, where beautiful examples of pottery were found, and one might expect to meet with at least some similar specimens at Sycamore Landing.

A marked flattening of the base of vessels, a specialty of the region, was noticeable in this cemetery also.

Vessel No. 48, represented by parts only, is a bottle of coarse, yellow ware covered exteriorly with green pigment, the analysis of which is given in our introductory remarks on the pottery of this region.

Vessel No. 36, an undecorated bottle, has at one time rested on three supports which were missing when the vessel was found. There was no opening between the body of the bottle and the supports, as there sometimes is in vessels of this kind.

Vessel No. 7. A bowl of black ware (Fig. 117), bearing an incised decoration, rather roughly executed.

Vessel No. 66. A pot of brown ware, having flat base and bearing incised decoration composed mainly of a design of spirals, three times shown (Fig. 118).

FIG. 117.—Vessel No. 7. Sycamore Landing. (Diam. 8.2 inches.)

FIG. 118.—Vessel No. 66. Sycamore Landing. (Diam. 6.4 inches.)

CEMETERY ON THE KENO PLANTATION, MOREHOUSE PARISH, LA.

The Keno Place is one of a number of plantations stretching contiguously for miles along the bayou, all belonging to Mr. James G. Sandidge, of Bastrop, La., who has traveled extensively and who takes great interest in archæological matters.

About one-quarter mile N. by W. from the landing at the Keno Place, in a cultivated field, was an indistinctly defined area hardly appreciably higher than the level of the surrounding field. This slight elevation, we were informed by Mr. Sandidge, had attracted his attention for some time, owing to the large fragments of pottery that had been plowed from it.

The soil of this area, much darker than that of the surrounding field, still had on the surface many fragments of pottery, besides numerous chert pebbles and bits of chert, a mass of fossil wood, a stone pitted on both sides and several sandstone hones.

Those employed on the plantation told of glass beads that had been uncovered by the plow at this place.

Trial-holes in various parts of this area came at once in places upon fragments of human bones and vessels of earthenware.

Next eleven trenches, beginning well out in the level ground and converging toward all parts of the elevation, were continued until an area 82 feet by 86 feet

was defined as seemingly that in which the human remains and pottery were included. This area, which proved to be somewhat greater than necessary on one side, was completely worked through by us, at depths depending on the varying thickness of the layer of dark, loamy clay, which rested upon untouched clay of lighter color, and upon the depth of various grave-pits which extended into undisturbed clay, the deepest of which was 3 feet.

The outer parts where grave-pits were less frequently found, though they were numerous even there, were dug through with spades, but the central portion of the area, 23 feet by 28 feet in extent, where the graves cut through each other and were present almost throughout, was gone through with the aid of trowels alone.

The condition of the human remains in this cemetery was such that not only no bones were saved, but practically all that were found could have been contained in a space considerably less than the size of a bucket and consisted almost exclusively of mere outlines of skulls, crumbling crowns of teeth, and occasional spongy fragments of long-bones.

These traces of human remains were encountered 255 times, from the surface, where they had been disturbed by the plow, down to the bottom of the deepest graves.

This enumeration by us is, of course, no exact indication of the number of individuals originally buried in the cemetery, as it is evident that fragments of bone belonging to the same skeleton, but at some distance apart, might be twice scored, or even more often. On the other hand, many burials unquestionably had disappeared.

It is needless to say that determination as to form of burial was almost impossible, though as many of the grave-pits were small and circular, presumably the bunched form of burial had been in excess of the flexed burial or the burial at length.

However, three burials certainly, and perhaps a fourth, had been of the extended variety. One of these extended burials offered features of interest.

Burial No. 178, the head directed toward the south, lay about 20 inches below the surface, on a substance seemingly bark, which rested on the undisturbed clay at the bottom of the grave. This substance, about an inch in maximum thickness, was from 10 to 11 inches in width.

At the right-hand side of the skeleton, in contact with part of it, was a circular staff or pole, of wood, badly decayed, 3 inches in diameter at the end nearer the head, and 2 inches in diameter near the lower end. The length of the pole was 5 feet 4 inches, when first noticed, but as the feet of the skeleton in question had been cut away by the digger, it is possible that part of the staff or pole also had been removed. No sign of metal was present with the wood, nor was there any trace of strips of hide bound around it. Shafts of spears of modern Indians sometimes were ornamented with hide cut in strips. It is a question, however, considering the condition of the bones in this cemetery, if strips of hide, had they originally been present, would have remained, even in part, to the period of the discovery of the wood. No lancehead was found in association.

At the left side of the skull was a mass of red pigment (iron oxide) and nine gracefully shaped arrowpoints of chert.

At the back of the skull, near the left shoulder, was a vessel of earthenware.

For some cause which we are unable to explain, the condition of the bones of the three extended burials was much better than that of the other bones found in this cemetery, though these burials at length appeared as skeletons only, while undisturbed, and crumbled into fragments on removal.

One other burial in this cemetery was of special interest.

Vessel No. 434, an undecorated bowl 11 inches in diameter, lay over a skull which it almost covered, 34 inches down, at the bottom of a grave. Above it in the pit were partly broken vessels which had been thrown aside when the excavation for the urn-burial was put down through the burial or burials with which these vessels had been.

The covering of the isolated skull by an inverted bowl as a form of burial was practised along the western coast of that part of Florida which belongs to the mainland. Urn-burial, we may say incidentally, was not in vogue in peninsular Florida.[1]

Evidently it had been the custom in this cemetery to place mortuary tributes practically with all interments of human remains, as objects were found with nearly all the burials, and when they were not present, their absence, we think, could be explained through aboriginal disturbance, or the likelihood that some artifact had been with a part of the burial now gone through decay, as many objects lay apart from human remains.

We shall now describe all artifacts found at the Keno Place, except earthenware vessels placed with burials having no other objects in association.

Burial No. 1, fragments of bone, had near it an earthenware tobacco-pipe.

Burial No. 3, remains of teeth. With these were an earthenware vessel; blue glass beads; remains of an ornament of sheet-copper or of sheet-brass, reduced almost to the consistency of paste, which had been wrapped in matting, a part of which remained.

Burial No. 11, fragments of skull having two vessels, one on each side, and a fragment of a sheet-brass ornament with matting on the outer side.

Burial No. 12, teeth, 33 inches down. Fragments of an elliptical ornament of sheet-brass or sheet-copper, corroded through and through. This ornament, which lay near three earthenware vessels, had matting on the outer surface, presumably part of the general wrapping of the burial, and woven fabric on the inner surface. The ornament had been suspended by strands of glass beads, which extended downward. The stringing material had disappeared.

Burial No. 20, teeth. Two vessels of earthenware; one pipe.

Burial No. 25, remains of a skull. A knife of chert, with rounded corners; a double-bladed chisel, perhaps of metamorphic rock, 3 inches in length; a vessel of earthenware.

[1] "Aboriginal Urn-burial in the United States," by Clarence B. Moore, American Anthropologist, Oct.–Dec., 1904.

Burial No. 31, teeth. Two earthenware vessels so placed that evidently they had been on each side of a skull: fragments of sheet-copper or sheet-brass, which also had been placed on opposite sides of the skull and presumably had been ear-plugs.

Burial No. 33, teeth. Six tubular beads of sheet-brass, badly corroded, each about two inches in length when found; a small elliptical ornament of sheet-copper; two earthenware vessels on one side of where the skull had been, and one vessel on the other side.

Burial No. 34, traces of bones. Three earthenware vessels; a bone implement much decayed; sixteen small flakes of chert.

Burial No. 37, teeth. Three vessels of earthenware; thirty-eight small flakes of chert; one pebble; one sandstone hone of the class which excites such lively interest in the explorer when first in contact with his trowel and such intense disgust when brought to the light of day.

Burial No. 42, fragments of bone. Three earthenware vessels; a ceremonial axe of sandstone, 7.75 inches in length, 4.1 inches across the cutting edge, and .6 of an inch in maximum thickness (Fig. 119). We consider this axe, which has a perforation to aid in attachment, to have belonged to the ceremonial class on account of the material of which it is made, as it is evident that sandstone with a sharp cutting edge, such as is present on this axe, could withstand but little rough usage.

FIG. 119.—Ceremonial axe. Keno Place. (Length 7.8 inches.)

We are indebted to Mr. C. C. Willoughby for the information that there are several perforated axes and adzes in Peabody Museum, Harvard University, one of which, of lignite, from a St. Francis river, Arkansas, mound, Mr. Willoughby considers to have been ceremonial, owing to the non-resistant character of its material.

Burial No. 44, fragments of skull, bits of long-bones. Two earthenware vessels; glass beads.

Burial No. 46, fragments of bone. A "celt" of medium size, given to Mr. Sandidge, owner of Keno Plantation.

Burial No. 71, fragments of bone. Three vessels of earthenware and a "celt" 5.5 inches in length.

Burial No. 81, teeth. Four chert pebbles; two vessels of earthenware.

Burial No. 83, fragments of bone. Glass beads; the vessel of the "teapot" variety, coated with red pigment, referred to elsewhere in this account of the Keno cemetery.

Burial No. 90, teeth. Two vessels on one side of where the skull had been, one on the other side; one hundred and fourteen small chips of chert.

Burial No. 93, remains of a skull and part of a clavicle. Corroded brass on the remaining part of the clavicle which, no doubt, the copper salts had preserved.

Burial No. 94, parts of a skull. Two earthenware vessels; glass beads.

Burial No. 97, teeth. Glass beads; a small mass of galena.

Burial No. 99, bone fragments. A disk of brass, 8 inches in diameter, which fell into bits on removal.

Burial No. 104, teeth. One earthenware vessel; nine flakes of chert.

Burial No. 111, bone. One vessel; four flakes of chert.

Burial No. 118, parts of a skull. Four vessels; seventeen chips of chert.

Burial No. 132, parts of ribs. Disk of brass, 4.75 inches in diameter, lying upon the remaining parts of the bones.

Burial No. 145, parts of a skull. Two chisels wrought from chert pebbles, each about 3 inches in length.

FIG. 120.—Hatchet perforated for attachment. Keno Place. (Full size.)

Burial No. 150, parts of a skull. A chisel 1.5 inch in length; a hatchet of a hard rock, possibly metamorphic, about 4 inches in length, 2.5 inches in breadth, .7 of an inch in maximum thickness (Fig. 120). This hatchet, of a rare type, having

a perforation to aid in attachment to the handle, has on one side evidence that the hollow drill had twice been started without accomplishing its purpose, the third attempt, however, having been successful. On the opposite side is a longitudinal groove where an attempt to cut through the stone has been abandoned, owing, probably, to a wish, on second thought, to have the implement somewhat broader.

Burial No. 171, teeth. Three earthenware vessels; glass beads.

Burial No. 172, parts of a skull. Three earthenware vessels; the carapace of a tortoise.

Burial No. 174, parts of a skull. Three earthenware vessels; a pipe of earthenware.

Burial No. 177, teeth. Two vessels of earthenware; nine thin and beautifully wrought arrowheads of chert, some barbed and with serrated edges.

Burial No. 178 has been described (page 121).

Burial No. 179, parts of a skull. Three earthenware vessels; ten delicately wrought leaf-shaped implements of chert, ranging between 1.5 and 2 inches in length.

Burial No. 180, teeth. Four small chips of chert.

Burial No. 206, remains of a skull. One earthenware vessel; glass beads; remains of a brass ear-plug on each side of the head.

Burial No. 210, parts of a skull and fragments of other bones. One earthenware vessel; eighteen beautiful arrowheads of chert; an axe probably of sedimentary rock, 7.25 inches in length, 3.5 inches across the cutting edge (the maximum width of the axe), 2 inches across the opposite end, and 1 inch in maximum thickness. This axe is without perforation.

Burial No. 214, teeth. Two earthenware vessels; a brass ring; a few chips of chert.

Burial No. 215, teeth. Two earthenware vessels; a trace of brass or of copper.

Burial No. 218, teeth. Two leaf-shaped implements of cherty material, with serrated edges, one 8.25 inches in length and 2.3 inches in maximum width, the other 5.75 inches long and 2 inches in greatest breadth; a small chisel wrought from a chert pebble.

Burial No. 223, fragments of bone. An earthenware pipe; five shell beads; an object of chert, not specifically described in our field notes, probably a chisel.

Burial No. 224, teeth and fragments of bones of a child. A small bell, possibly a hawk-bell, of thin sheet-brass; an annular ornament 1.25 inch in diameter, of thick sheet-brass, made by bending over the sides of a strip of the material until they almost joined, thus forming nearly a circular section, and then bringing together the two ends to form a ring; one shell bead; charcoal.

Burial No. 229, fragments of bone. A remnant of a tool of iron or of steel.

Burial No. 233, the urn-burial, has been described elsewhere (page 122).

Burial No. 238, parts of a skull. Two earthenware vessels; a lump of hematite; five flakes of chert, and, a few inches distant, thirty-eight flakes of the same material.

Burial No. 239, parts of a skull. Twenty-seven graceful arrowheads of chert;

three flakes of chert; part of the incisor of a beaver. The arrowheads with this burial pointed in different directions, so it is evident they had not belonged to a bunch of arrows when buried; a few inches from the pile of arrowheads just described was another pile consisting of thirty-eight points, all of chert, the points also directed in different ways; a small mass of hematite, roughly spheroidal.

Burial No. 243, parts of a skull. Glass beads; two disks of brass, each 2.3 inches in diameter, one each side of the head. These disks are without perforation. On one side of one disk are tufts of black hair, preserved by the copper salts, which, so far as Dr. Aleš Hrdlička, and Doctor Miller of the Division of Mammals, United States National Museum, can determine, is human hair (Fig. 121).

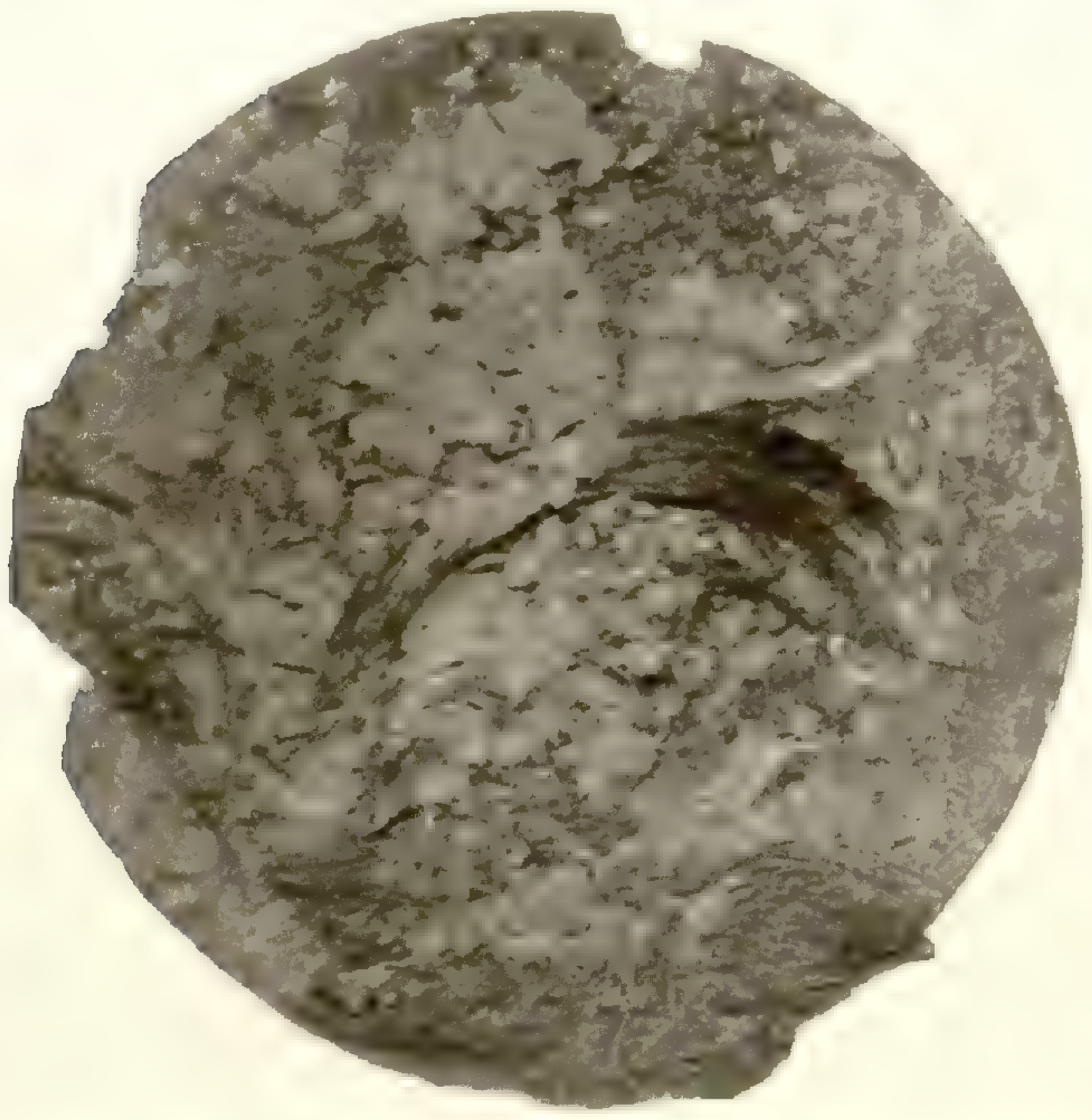


Fig. 121.—Brass disk with human hair attached. Keno Place. (Full size.)

Burial No. 246, fragments of bone. A perforated ceremonial axe of limonite, much deteriorated, of the type known as "hoe-shaped," having in places a deposit of hematite, dimensions 7.25 inches by 5.25 inches; one vessel of earthenware.

Burial No. 250, teeth. Glass beads; a pebble of chert.

Burial No. 252, fragments of a skull. Double-pointed spike of iron or of steel, 8.75 inches in length; one shell bead.

Burial No. 253, part of a skull. Two earthenware vessels; a mass of red pigment (oxide of iron).

Burial No. 255, teeth. One earthenware vessel, glass beads.

Apart from human remains (omitting vessels of earthenware not found associated with artifacts of other kinds) there came from the Keno Place cemetery:

Glass beads, one from the surface.

Two handsome leaf-shaped implements of cherty material; one, 7.5 inches in length by 2.7 inches wide; the other, 6.7 inches long and 1.4 inch in width; also one of the same material 2.7 inches long by .75 inch wide.

A "spade-shaped" ceremonial axe, probably of metamorphic rock, 6 inches long by 4.75 inches in maximum width, approximately, with perforation irregularly drilled.

Five "celts," the majority of sedimentary rock, the largest about 6 inches in length.

An elliptical ornament of shell.

A mass a red pigment (iron oxide).

Fragments of corroded sheet-copper or sheet-brass.

One chisel made from a chert pebble.

A pendant of hematite (Fig. 122).

A deposit consisting of twelve small chisels wrought from pebbles of chert;

two beautifully barbed arrowpoints also of chert; a fragment of another arrowhead; two small "celts" seemingly of sedimentary rock.

In all, some with burials, some not associated with human remains (though doubtless, as we have said, all objects from this cemetery had at one time been with burials), eleven pipes of earthenware, some broken, came from the Keno Place, six of which are shown in Figs. 123 to 128, inclusive.

FIG. 122.—Pendant of hematite. Keno Place. (Full size.)

FIG. 123.—Pipe of earthenware. Keno Place. (Full size.)

FIG. 124.—Pipe of earthenware. Keno Place. (Full size.)

FIG. 125.—Pipe of earthenware. Keno Place. (Full size.)

FIG. 126.—Pipe of earthenware. Keno Place. (Full size.)

FIG. 127.—Pipe of earthenware. Keno Place. (Full size.)

FIG. 128.—Pipe of earthenware. Keno Place. (Full size.)

Four hundred and eighty-five pottery vessels were found by us in the cemetery at the Keno Plantation. By this we do not mean that this number of vessels were saved—far from it—but that at least the number of vessels given by us had been placed in the cemetery by the aborigines. How many others had been plowed away before our coming or what number had been crushed by aboriginal disturbance into fragments too small for us to recognize as having constituted entire vessels, we are unable to say.

Our enumeration includes all whole vessels, and all broken ones provided sufficient of the vessel was found to indicate its entirety at the time of interment. Great numbers of those regarded as vessels, however, were not in a condition to save, being simply crumbling remains of parts of undecorated vessels of commonplace form; while others included in the enumeration were simply large fragments of undesirable pottery which had been mutilated by the plow.

The condition of the vessels in this cemetery was as a rule deplorable. Mostly of inferior ware, as a rule lacking sufficient tempering to make it durable, and often imperfectly fired, the pottery, after long soaking in water, often crushed into bits or so softened that it fell apart on removal, or in places clung bodily to the surrounding clay (showing the soil to be more tenacious than the ware), was in an almost hopeless state even without superadded conditions for evil. But in addition to all this was the fact that owing to the almost complete absence of bones in the cemetery, we were rarely able to come upon a burial and to follow it up with the trowel, as our custom is (and thus in a fair percentage of cases to come gently upon accompanying pottery), but often reached vessels first with the spade, and in a manner we do not approve.

Furthermore, the tenacity of the clay prevented thorough sifting and consequent recovery of all parts of broken vessels.

So far as could be determined, the vessels in this cemetery had been placed near the head, singly, in pairs, three together, or occasionally in groups of four, sometimes all on one side of the skull, sometimes separated by it. Once a vessel had been placed on top of a skull, its base resting on the bone; and to one side of the cranium was a vessel inverted over another.

Other methods of arrangement of mortuary accompaniments, practised by the aborigines who used the cemetery at the Keno Place, are as follows:

A single vessel standing upright.

Two or three upright vessels together.

One or two upright with one inverted alongside.

One upright, one on its edge, and one inverted.

One or two upright with another on its side.

A vessel standing on its base with two others on their sides.

A single vessel inverted, or sometimes an inverted pair, side by side.

An upright vessel covered with a large fragment of pottery.

An upright vessel having another inverted over it or over part of it, sometimes fitting closely.

The same arrangement with the addition of an upright vessel alongside.

An upright vessel with another turned over it, both covered with a large fragment of another vessel.

Two upright vessels each with another vessel inverted over it.

Three upright vessels, one of them surmounted by another vessel inverted.

An upright vessel protected by two others, each inverted at an angle to bring the upper edges in contact.

One vessel having another inverted over it. With these a vessel on its side with another so tilted that the aperture of the vessel on its side was closed by the base of the other vessel.

A vessel standing vertically, having its opening closed by the base of an upright vessel; alongside of these a vessel standing vertically.

The same arrangement except that the last named upright vessel had another turned over it.

Two or three upright vessels, one within the other.

Two upright vessels, one within the other, with an upright vessel alongside.

Two upright vessels, one within the other, both covered with an inverted vessel.

Two upright vessels, one containing a small inverted vessel, and covered with a large fragment of another vessel.

Three upright vessels together, one containing another upright vessel, and covered with a fragment of pottery.

A vessel on its side, containing another one.

In sixteen instances fragments of musselshells lay within vessels, singly except on two occasions when two shells were present together. Once a musselshell rested on the rim of a vessel. These shells were too badly broken for identification, except in two cases, when each proved to be *Lampsilis purpuratus*.

On several occasions the carapace of the tortoise lay within vessels, one shell being so small that presumably it had served as a spoon, like a musselshell, and not in place of an earthenware vessel, as was usually the case in the Ouachita valley region.

Nearly all vessels of earthenware from the cemetery on the Keno Place were of moderate size. In some groups, found with bones of children, all the vessels were diminutive.

Though, as we have said, the conditions for the recovery of the pottery at the Keno Place were unfavorable, a number of vessels of ware superior to the average were recovered in fragments, and these fragments were subsequently carefully cemented together, and restoration made when necessary and unquestionable. These vessels, together with a few found whole and many large fragments of pottery, show that the proportion of earthenware bearing decoration was greater than that in many cemeteries of the Ouachita region, though in most cases the decoration was very simple and crudely executed. One could wish also that the aboriginal artists had to a less extent confined their endeavor to the scroll and to combinations of the scroll.

Vessels from the Keno Plantation possess several features worthy of note. The length of neck of a number of the bottles is unusual; some of the bottles have a swelling of the neck similar to that of many bottles from Glendora. The flat base characteristic of the pottery of the Ouachita region was not so markedly present at the Keno Place as it was in some other localities.

The presence of a vessel of the "teapot" variety, coated with red pigment, in the Keno Place cemetery, is interesting. But one other vessel of this type was found by us in our season's work. It came from Glendora, as stated in the account of the cemetery there, and bears lined decoration on black ware. We have said in our report on the antiquities of the Arkansas river that vessels of this type are found only in eastern Arkansas and nearby regions, in which latter territory the Keno Place and Glendora are included.

Although, as we have said, vessels of an inferior class predominated in the cemetery at the Keno Place, there were a number of notable exceptions, both as to shape and as to decoration, and these, with some other vessels from the place, less noteworthy but illustrative of the pottery of the region, will now be particularly described.

Vessel No. 430. A bottle of brown ware (Fig. 129), with flat base and swelling neck, and well executed decoration of trailed lines, forming combinations of the scroll.

Fig. 129.—Vessel No. 430. Keno Place. (Height 4.9 inches.)

Vessel No. 310. Another bottle of the type just described (Fig. 130). This bottle, with several others from the Keno Place, is of the same type as many from the cemetery on the Glendora Plantation on the Ouachita river, only about four miles distant.

FIG. 130.—Vessel No. 310. Keno Place. (Height 7.1 inches.)

Vessel No. 474. A bottle of inferior ware, but otherwise resembling some of the bottles from the Glendora cemetery. Part of the neck, after breakage in aboriginal times, has been carefully smoothed to allow continued service for the vessel (Fig. 131).

FIG. 131.—Vessel No. 474. Keno Place. (Diam. 5.5 inches.)

FIG. 132.—Vessel No. 449. Decoration. (About two-thirds size.)

Vessel No. 449. This interesting effigy-bottle, with four legs, a tail, and a neck in place of an animal head (Plate VII), in some respects resembles a vessel from Arkansas figured by Holmes,[1] though the decoration of the Arkansas vessel is confined to the use of red and of white pigment. The bottle from the Keno Place, on the other hand, while covered with beautiful red pigment exteriorly and within the neck, has, in addition, over the outer, upper surface of the body, an incised design consisting of a combination of scrolls and disks in cross-hatch fields, shown in diagram in Fig. 132.

FIG. 133.—Vessel No. 370. Keno Place. (Height 12.6 inches.)

[1] "Aboriginal Pottery of Eastern United States," 20th Ann. Rep. Bur. Am. Ethn., Pl. XLII b.

ANTIQUITIES OF THE OUACHITA VALLEY.
KENO PLACE, VESSEL NO. 449. (FULL SIZE.)

COCKAYNE, BOSTON.

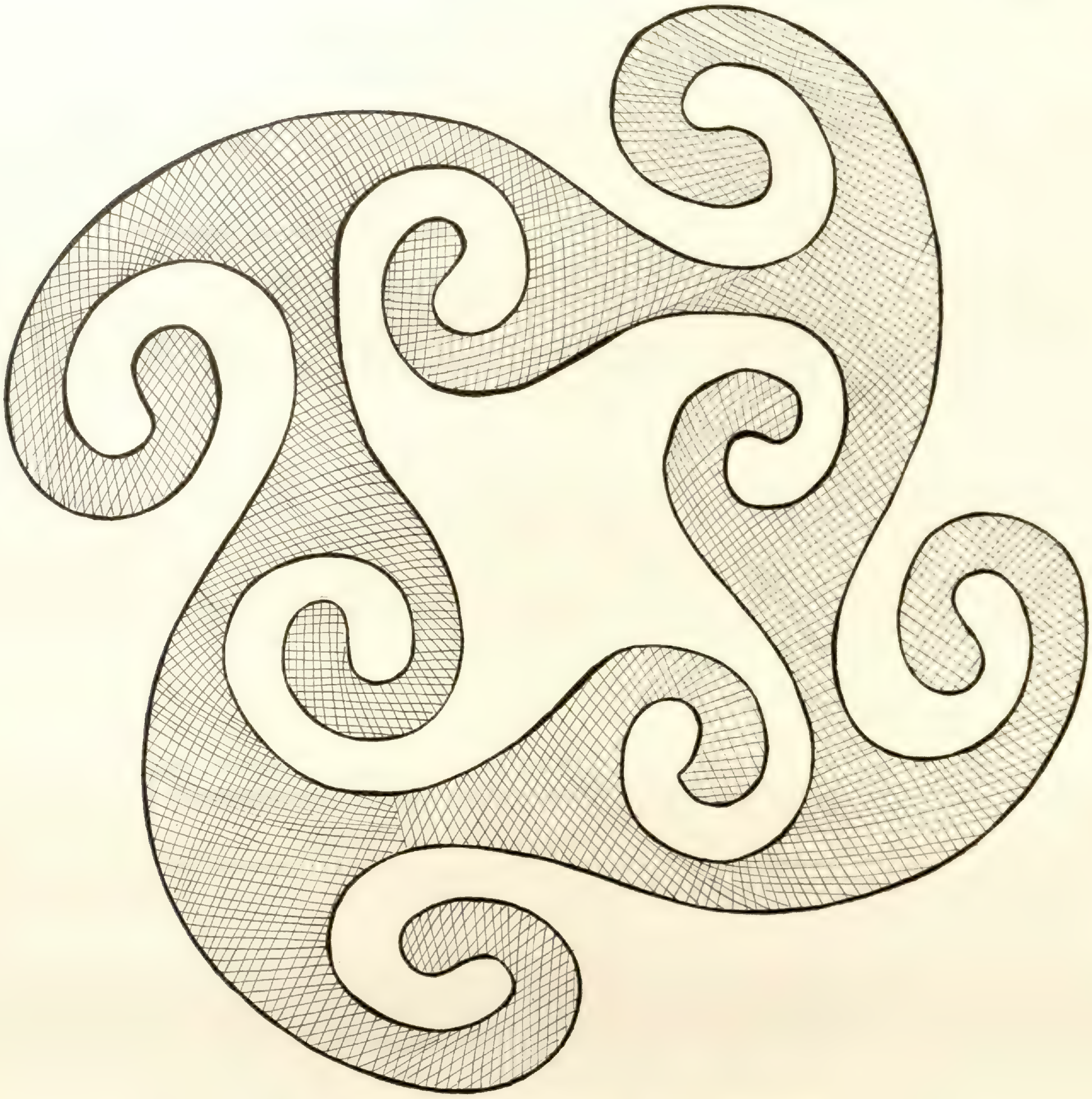


FIG. 134.—Vessel No. 370. Decoration. (About two-thirds size.)

Vessel No. 370. We have spoken of bottles from the Keno Place resembling others from the Glendora cemetery. In Fig. 133 is shown a bottle widely divergent from any found at Glendora, inasmuch as no bottles were met with there having other than short necks, while the neck of this bottle is unusually long, being 8.2 inches out of 12.6 inches, the entire height of the bottle. This bottle, of porous, yellow ware, bears an incised decoration, shown in diagram in Fig. 134, consisting of a scroll arrangement having the effect of a double swastika. The base of this vessel is slightly flattened.

FIG. 135.—Vessel No. 422. Keno Place. (Height 12.25 inches.)

Vessel No. 422. Another bottle, similar to that just described, the neck being 8 inches of the 12.25 inches of the total height of the bottle (Fig. 135). There is a slight flattening of the base. The decoration consists in the main of four series of incised, concentric circles.

FIG. 136.—Vessel No. 427. Keno Place. (Height 7.2 inches.)

Vessel No. 427. A bottle of unusual and interesting form, having a barrel-shaped body and a short, swelling neck indicating the compound shape, the neck representing a cup which has been superimposed (Fig. 136). The decoration consists of a series of meanders. The ware is yellow and not of the best quality.

FIG. 137.—Vessel No. 118. Keno Place. (Full size.)

FIG. 138.—Vessel No. 174. Keno Place. (Height 8 inches.)

Vessel No. 118. A diminutive bottle of coarse, yellow ware, with a rudely executed scroll decoration (Fig. 137).

Vessel No. 174. A bottle of yellow ware (Fig. 138), having an incised design, five times shown, consisting of two concentric circles in cross-hatch between crescentic figures also in cross-hatch, each series of crescentic figures, above and below, forming a five-pointed star.

Vessel No. 254. A bottle of dark ware, compressed vertically as to the body, to form an equatorial angle. The neck, slightly flaring at first, then contracting, ends in a horizontal lip. The decoration, present on the upper portion of the body, consists of the usual scroll (Fig. 139).

Vessel No. 169. A bottle of common, yellow, porous ware, probably a compound form, with flat base and a fairly-long neck (Fig. 140). The decoration, rudely executed on the middle and upper parts of the body, is made up of mushroom-like figures, erect and inverted alternately, partly surrounded by cross-hatch bands.

Vessel No. 136. The body of a bottle, of brown ware, with an evenly executed scroll decoration (Fig. 141).

Vessel No. 23. A bottle of soft, yellow ware, 4.2 inches in height, having on the body two scrolls of red pigment, and two of white pigment, the red and the white scrolls partly interlocking. The neck is coated with red pigment. This little vessel may well be an importation from the Arkansas river region, where bottles with just such decoration are so abundant.

FIG. 139.—Vessel No. 254. Keno Place. (Height 10.5 inches.)

FIG. 140.—Vessel No. 169. Keno Place. (Height 10.8 inches.)

FIG. 141.—Vessel No. 136. Keno Place. (Diam. 4.25 inches.)

Fig. 142.—Vessel No. 359. Keno Place. (Diam. 7.3 inches.)

Vessel No. 359. A bowl of polished black ware, bearing an incised decoration shown in Fig. 142.

Fig. 143.—Vessel No. 471. Keno Place. (Height 7.4 inches.)

FIG. 144.—Vessel No. 358. Keno Place. (Height 7 inches.)

Vessel No. 471. A vase, probably unique, of compound form, representing a short-necked bottle imposed upon a vessel of eccentric shape, having a series of four projecting lobes, above and below (Fig. 143). The ware is most inferior. The decoration, faintly and rudely executed, consists partly of the scroll and partly of parallel lines and punctate markings.

Vessel No. 358. A bottle of inferior, light-brown ware, with tripod support, somewhat similar to a bottle found by us in the Glendora cemetery. The legs, which are hollow, communicate with the body of the vessel by means of series of small perforations at the points of union, as in the case of the Glendora bottle. The decoration, coarsely executed, consists of the usual disks and scrolls (Fig. 144).

FIG. 145.—Vessel No. 426. Keno Place. (Diam. 8 inches.)

FIG. 146.—Vessel No. 426. Decoration. (About half size.)

ANTIQUITIES OF THE OUACHITA VALLEY.

KENO PLACE. VESSEL NO. 383. (FULL SIZE.)

COCKAYNE, BOSTON.

Vessel No. 426. A bowl of yellow ware (Fig. 145), with a handsome, trailed meander-combination shown in diagram in Fig. 146.

Vessel No. 383. A bottle of good, black ware, ovoid body with flattened base and slight swelling of the neck (Plate VIII). The body of the bottle bears a decoration dividing it exteriorly into four equal parts by a like number of series of three lines each, running vertically. Two opposite series consist of unbroken, parallel lines. The median line of the other two series parts somewhat above the middle of the body, while the including lines extend outward at the same place. All these lines, incised, have at one time contained brilliant red pigment, which still remains in places. In our representation of this bottle the color is shown with slight restoration in the places whence it has disappeared through lapse of time.

Vessel No. 365. A short-necked bottle of soft, yellow ware, 5.2 inches in height, coated over the exterior with red pigment. This bottle resembles in every way many found along the Arkansas river.

Vessel No. 431. A bowl of porous, yellow ware, 6.3 inches in diameter, which has been decorated throughout the interior with crimson pigment, much of which still remains. Beginning at the rim an encircling band of similar pigment extends downward on the outside a distance of 1.75 inch. On two opposite sides of the aperture are projections through which holes for suspension have been made vertically.

Vessel No. 415. A bowl similar to Vessel No. 431, with the exception that the parts devoted to suspension are absent.

Vessel No. 428. A bottle of porous, brown ware, 5.2 inches in height, with a faint incised design four times shown (Diagram, Fig. 147).

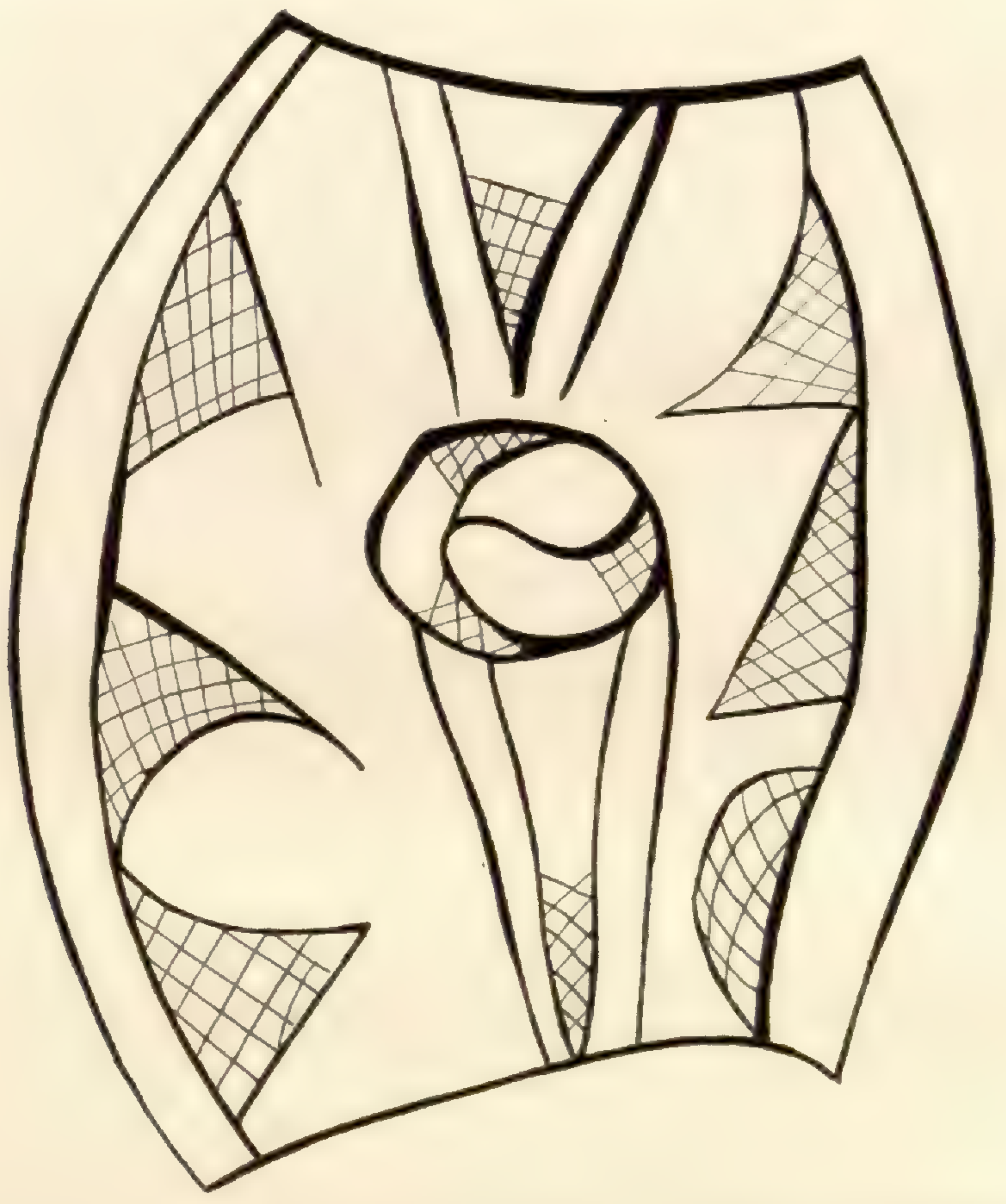


FIG. 147.—Vessel No. 428. Decoration. (About two-thirds size.)

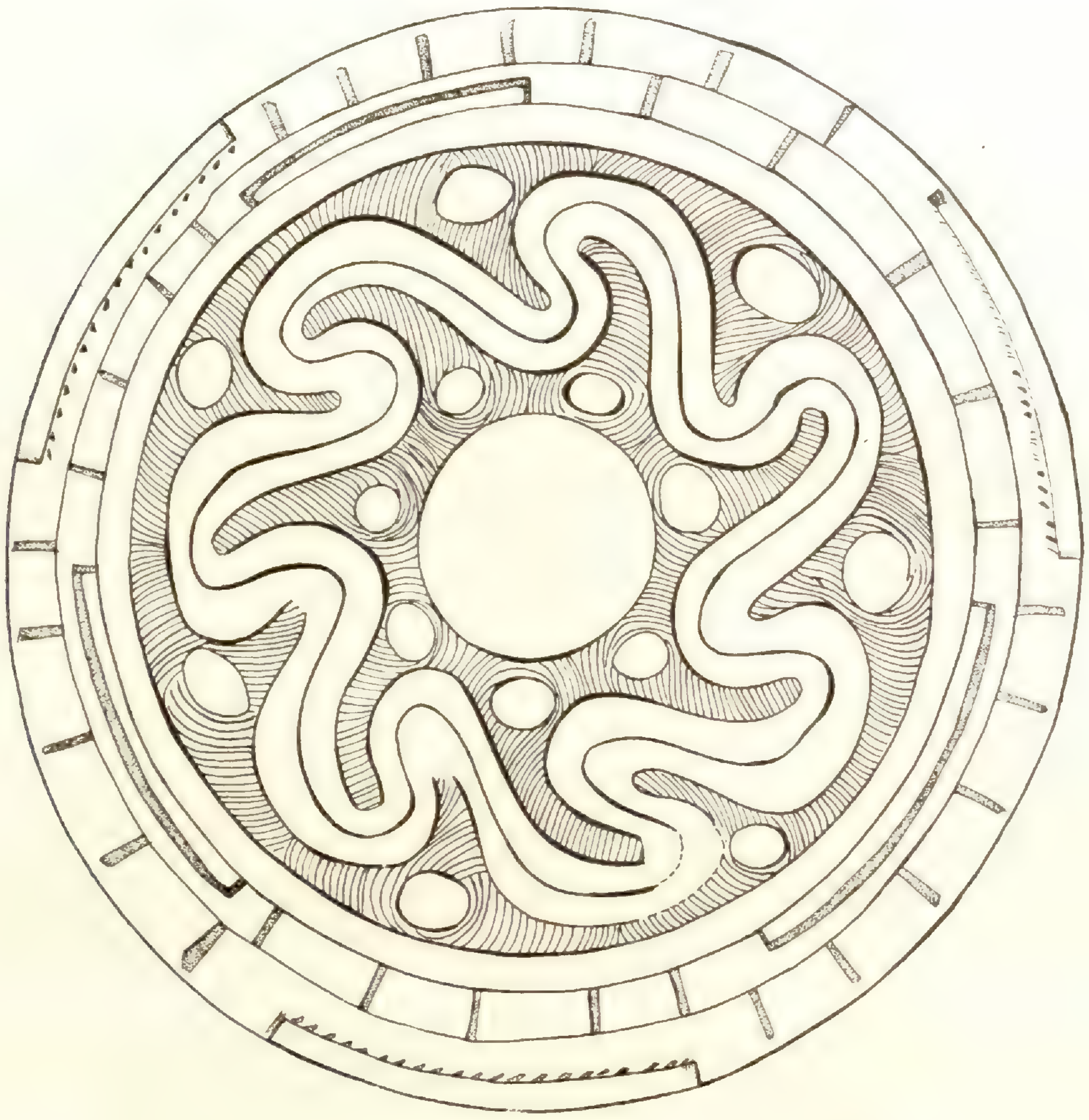


FIG. 148.—Vessel No. 172. Decoration. (About half size.)

FIG. 149.—Vessel No. 175. Keno Place. (Diam. 5.75 inches.)

Vessel No. 172. A bowl about 5.5 inches in diameter, decorated with red pigment inside and out, now worn away in places, has, in addition, handsome incised decoration, mainly the current scroll and disks, in a lined field, shown in diagram in Fig. 148.

Vessel No. 175. A bowl of well-smoothed black ware (Fig. 149), having below the opening an incised decoration consisting mainly of the scroll. A faint trace of red pigment is perceptible in places in the lines.

Vessel No. 198. A vessel of the "teapot" variety, 5.6 inches in height, coated on the outside with red pigment. This "teapot," and one from the Glendora cemetery, as we have said, are the only examples of the type found by us along the Ouachita valley.

Vessel No. 341. A circular platter 6.25 inches in diameter, of yellow ware, decorated interiorly below the margin with two incised, encircling lines. Over the entire exterior is an incised swastika similar to that shown in Fig. 151, save that no cross-hatched lines are present in the design.

Vessel No. 435. A beautiful bowl of fine, polished, black ware and of graceful form (Fig. 150), bears on the outside an interesting combination of the scroll, the lines of which have been accentuated with red pigment.

FIG. 150.—Vessel No. 435. Keno Place. (Diam. 5.5 inches.)

FIG. 151.—Vessel No. 446. Keno Place. (Diam. 7.8 inches.)

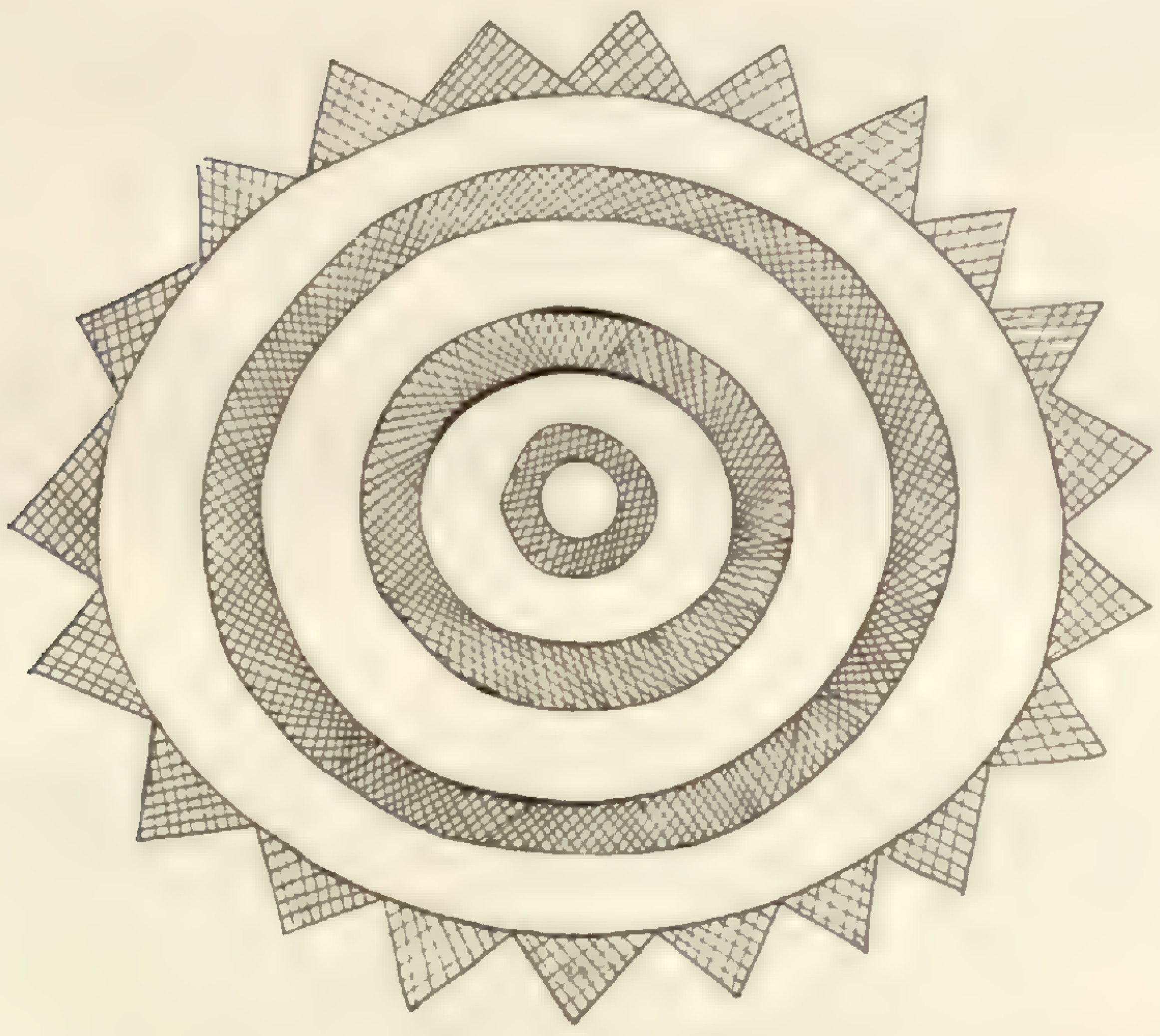


FIG. 152.—Vessel No. 271. Decoration. (About half size.)

Vessel No. 446. A flat bowl of light-brown ware (Fig. 151), bearing exteriorly as decoration a variety of the swastika, partly shown in cross-hatched lines.

Vessel No. 271. A bottle of common, yellow ware, from which most of the neck is missing. The decoration is made up of four similar designs—concentric circles, probably sun-symbols. On the outer circle are dentate markings, possibly crests of the plumed serpent. One of these designs is shown in diagram in Fig. 152.

Vessel No. 479. A vessel 5.9 inches in diameter, with hemispherical body, flattened base, and a short neck, slightly flaring. A coating of red pigment over the exterior of the vessel and on the interior of the neck has largely disappeared. In addition to the pigment, there has been incised decoration exteriorly on the body and on the neck, consisting of the usual disks and scrolls, much of which has disappeared through disintegration. On two opposite sides of the vessel are four holes for suspension.

FIG. 153.—Vessel No. 252. Keno Place. (Diam. 5.1 inches.)

Vessel No. 252. A vessel, much resembling a bottle in form, of porous, yellow ware, bearing incised designs of two patterns, each four times shown, possibly conventional representations of the eye (Fig. 153).

FIG. 154.—Vessel No. 91. Keno Place. (Diam. 6.25 inches.)

FIG. 155.—Vessel No. 421. Keno Place. (Diam. 5.25 inches.)

Vessel No. 91. A vessel of porous, yellow ware, with flat base, and a trailed design three times shown, perhaps representations of a pair of eyes from an aboriginal point of view (Fig. 154).

Vessel No. 421. A vessel resembling a short-necked bottle in form, of coarse, yellow ware, having as decoration on the body, three incised spirals with notched markings, perhaps originally intended to represent attributes of the winged serpent. Around the short, contracting neck are four incised, encircling lines (Fig. 155).

FIG. 156.—Vessel No. 371. Keno Place. (Diam. 6.7 inches.)

Vessel No. 371. A vase of rather soft, yellow ware, with flat base, having as decoration six neatly-made designs, each consisting of a spiral combination filled in with cross-hatch lines (Fig. 156).

Vessel No. 444. A bowl of coarse, yellow ware, 8.25 inches in diameter, having on one side the effigy of an animal head, perhaps that of a dog, looking inward. The opposite side of the bowl, where a conventional tail probably was, is missing. On the body of the bowl is a rude, lined decoration.

FIG. 157.—Vessel No. 48. Keno Place.
(Height 4.6 inches.)

FIG. 158.—Vessel No. 437. Keno Place.
(Diam. 2.1 inches.)

FIG. 159.—Vessel No. 373. Keno Place.
(Full size.)

Vessel No. 48. An ovoid vessel of inferior, yellow clay, with flat base surrounded by incised lines, between which and similar lines at the apex are three meander designs. There are two holes for suspension (Fig. 157).

Vessel No. 437. This vessel, of soft, yellow ware, with flat base, possibly represents a gourd, though the presence of a double stem is hard to explain (Fig. 158).

Vessel No. 373. This curious little object of unusual form is unlike anything found by us elsewhere in the Ouachita valley (Fig. 159).

The Keno Plantation is but four miles in a straight line from Glendora on Ouachita river. Both these places were important sites; both contained European artifacts; they had, as might be expected, interesting points in common, but, on the other hand, they showed divergent features.

We find in the two cemeteries mortuary deposits of pottery, arranged in great diversity of grouping, and tributes of ornaments of brass and of glass beads, placed

with the dead. The earthenware from both cemeteries has points of resemblance in style of decoration, though artistic workmanship and design greatly predominated at Glendora. A swelling of the neck is common to a number of bottles from both cemeteries.

On the other hand, vessels with markedly long necks, which are so conspicuous a feature of the pottery of the Keno Plantation, were not found at Glendora. In the Keno cemetery were numerous tobacco-pipes; Glendora furnished but one. From the Keno Place came large deposits of exquisitely shaped arrowpoints; but two projectile points, both coarsely made, were found at Glendora. At the Keno Place were types of axes not present at the Glendora cemetery.

Cemetery on the Ward Place, Morehouse Parish, La.

The plantation known as the Ward Place is about two miles in a NE. direction from Wardville. This plantation has been divided in recent times, Mr. T. L. Day owning the southernmost portion, on which he resides.

In the northeastern corner of the cultivated field on Mr. Day's place, in full view from the road and in sight from the bayou, was a slight rise in the ground where the soil was darker than that of the rest of the field. On this rise were strewn various indications of aboriginal occupancy.

Trial-holes almost immediately came upon human remains, and with the aid of considerable digging, an irregular area about 50 feet by 55 feet was found to contain burials. It is possible that other burials lie in the neighborhood, but, if so, they are widely scattered and probably would not repay the extensive digging necessary to find them.

The area to which reference has been made was completely dug through by us, and was found to contain thirty-one burials, none at a greater depth than 2.5 feet, and most of them considerably nearer the surface.

The slight elevation in which the burials lay was composed of dark soil formed by continued occupancy. Below this dark soil was tough red clay. The burials had been placed at various depths in this clay, and the distance at which they were from the surface, of course, depended on the depth they had been let into the clay and on the thickness of that part of the elevation under which they happened to be.

As the presence of human remains at this place was unsuspected previous to our visit, and as the bones lay below reach of the plow, the burials found by us were practically intact, and consisted of thirty skeletons extended on the back, and one aboriginal disturbance.

Of the full-length burials Number 6 had the right foot crossed above the left ankle, and Number 17 had the right forearm flexed, the hand resting on the shoulder, near the skull.

All the extended burials had the heads in a southerly direction (between SE. by S. and SSW.) many due S. The burials lay about parallel to the bayou.

It was evident that the skeletons, all of which belonged to adults, with the exception of three adolescents and two children, had been placed in the ground

when denuded of flesh, as bones were often out of place and small bones, in some instances, were missing.

Apart from burials were found several knives and arrowheads, of chert and a neatly-made piercing implement of bone, round in cross section, about 4 inches in length.

We shall now describe in detail all objects found with burials at this place.

Burial No. 1—a small earthenware vessel near the skull.

Burial No. 2—a vessel, also small, at the right wrist.

Burial No. 3—a small pot, with holes for suspension, at the head; five tines from deer-antler, about one foot from the head, one having a groove around the proximal end, another smoothed exteriorly and hollowed so as to serve as an arrowpoint.[1]

Burial No. 4—an earthenware vessel at the head; near the shoulder a small, ellipsoidal mass of hematite, highly polished, but without groove or perforation; the carapace of a tortoise.

Burial No. 5—two vessels at the left shoulder, one of which had charcoal beneath it; at the right elbow, a musselshell somewhat broken, with a circular perforation for the insertion of a handle.

Burial No. 6—two vessels of earthenware near the skull, one a bowl inverted and covering part of the opening of the other vessel, a pot.

Burial No. 7—a small vessel near the head; a tine of deer-antler, worked at both ends; two musselshells (*Lampsilis anodontoides*) near the shoulder and thorax, having each a perforation for suspension near the hinge.

Burial No. 9—a small pot above the right knee.

Burial No. 10—a small pot at the head; two piercing implements of bone at the outer side of the right humerus; a small musselshell (*Quadrula heros dombeyana*) over the left elbow, the shell having a circular perforation for use as a hoe.

Burial No. 11, a child—a pot near the skull.

Burial No. 12—an earthenware vessel near the left shoulder.

Burial No. 13—a pot near the skull; the carapace of a tortoise at the right shoulder; beneath the right humerus, a musselshell hoe.

Burial No. 14—an earthenware vessel at the side of the left knee; at the shin, a rude disk of sedimentary rock, 2.25 inches in diameter.

Burial No. 15—three vessels together, about one foot from the skull.

Burial No. 16—at the left shoulder and head, a heterogeneous collection as follows: one barbed arrowpoint of chert, with the point missing; one chert knife; twelve pebbles and parts of pebbles of chert; one implement of bone with rounded point; eight tines of deer-antler, some cut squarely across at the proximal end; a number of bones belonging to male raccoons, unworked with the exception of three, which have the proximal ends cut off and the other ends carefully worked to sharp points. An implement similar to those in question, except that the proximal end remains on the bone, was lately figured by Mr. Robert F. Gilder,[2] as having been found in eastern Nebraska. Mr. Gilder describes the implement as a fish-hook.

[1] As to antler-points shot into human beings see Anthropological Papers, American Museum of Natural History, Vol. III. "The Lenapé Indians of Staten Island"; by Alanson Skinner, p. 15, Pl. III.

[2] "American Anthropologist," Jan.–March, 1909, plate I–2–fig. a.

In Fig. 160 we show the implements found by us, and one of the unworked raccoon-bones. It will be noted that the angle of the worked bones is hardly such as to hold a fish unless with some added part.

We are indebted to Mr. William C. Mills, M.Sc., whose archaeological work in Ohio is so well known, for the information that he considers bones of the kind in question belonging to the raccoon and to the bear, when sharpened at the end, to have been used as awls; and that he obtained at the Baum village-site upward of 125 of these implements, and more than half as many of the same kind at the Gartner village-site.

FIG. 160.—Raccoon bone, and awls made from similar bones. Ward Place. (Full size.)

Burial No. 17—three vessels near the skull.

Burial No. 19—a musselshell hoe and a rude pot of earthenware, near the skull.

Burial No. 20—at the cranium, a shell hoe (*Quadrula heros dombeyana*), better preserved than some.

Burial No. 21—a bowl near the head.

Burial No. 22—a vessel at each side of the head; with these a shell containing a black substance determined by Dr. H. F. Keller as follows: "A mixture of finely divided carbon and carbonate of lime and contains also smaller amounts of phosphate of lime. The carbon appears very black and lustrous under the microscope, while the carbonate is present partly in pearly scales and partly in an earthy form. It seems probable that the material is the charred remains of bones."

Burial No. 23—a pot near the skull.

Burial No. 24—spread out in a layer beneath the skull, which rested upon them, was a miscellaneous collection as follows: twenty-two tines of deer-antler, squarely cut off at the proximal ends; two arrowpoints of chert, one having lost a barb; three flat masses of sandstone, probably hones; eleven implements of bone, some with rounded points, all with articular parts remaining; ten pebbles of chert; nine flakes of the same material.

Burial No. 25, a young child—at the head, a pot.

Burial No. 26—at the right side of the skull, a pot having its opening covered with the carapace of a tortoise, the concave side uppermost; four small chisels made from chert pebbles, each about 2.5 inches in length, three with highly polished cutting edges.

Burial No. 27—at the left shoulder, a pot so carefully covered with a large fragment of another vessel that no soil had entered.

Burial No. 30—at the left shoulder, a bowl inverted over a pot in which was the carapace of a tortoise.

Burial No. 31—at the right wrist, a musselshell hoe; at the right upper-arm, a large fragment from an earthenware vessel, covering about two-thirds of the thorax. Under this fragment was a highly polished chert pebble and a small amount of charred material. At the right of the skull was an inverted bowl.

Thirty-one vessels of earthenware were found in the cemetery at the Ward Place, the number accidentally coinciding with that of the burials.

The pottery from this place is, with one or two exceptions, shell-tempered. The form usually approximates that of the pot; some vessels with globular or semi-globular bodies, having upright or flaring rims, were encountered. Curiously enough the bottle was not found in this cemetery, if we except a globular vessel which seemingly had been the body of a bottle, but which, having lost the neck, had the margin of the fracture carefully smoothed.

No pigment was found on any vessel, and decoration, when attempted, almost invariably consisted of some combination of the scroll, rudely incised.

A few vessels from this place will be described in detail.

FIG. 161.—Vessel No. 13. Ward Place. (Diam. 6.3 inches.)

Vessel No. 13. This vessel, of hard, yellow ware and of rather interesting shape (Fig. 161), is not completely made plain in the illustration as the upper part of the body extends downward somewhat after the manner of a mushroom. The decoration, incised, consists of a meander surrounding disks above and below, alternately. Faint cross-hatch work has been attempted on part of this decoration.

Vessel No. 3. A bowl of fairly hard, brown ware, with flat base (Fig. 162), having as decoration below the rim, on the outside, six symbols, perhaps representing the eye, one of which, owing to lack of space, is but partly shown. The remainder of the exterior is occupied by a combination of scrolls, the upper ones being filled in with punctate markings, as shown diagrammatically in Fig. 163.

FIG. 162.—Vessel No. 3. Ward Place. (Diam. 6.4 inches.)

FIG. 163.—Vessel No. 3. Decoration. (Almost half size.)

Vessel No. 4. A vessel of yellow ware (Fig. 164), bearing a decoration akin to a considerable number of others found by us in the Ouachita valley region, which we believe may represent the eye. This decoration is shown in diagram in Fig. 165.

Fig. 164.—Vessel No. 4. Ward Place. (Diam. 5 inches.)

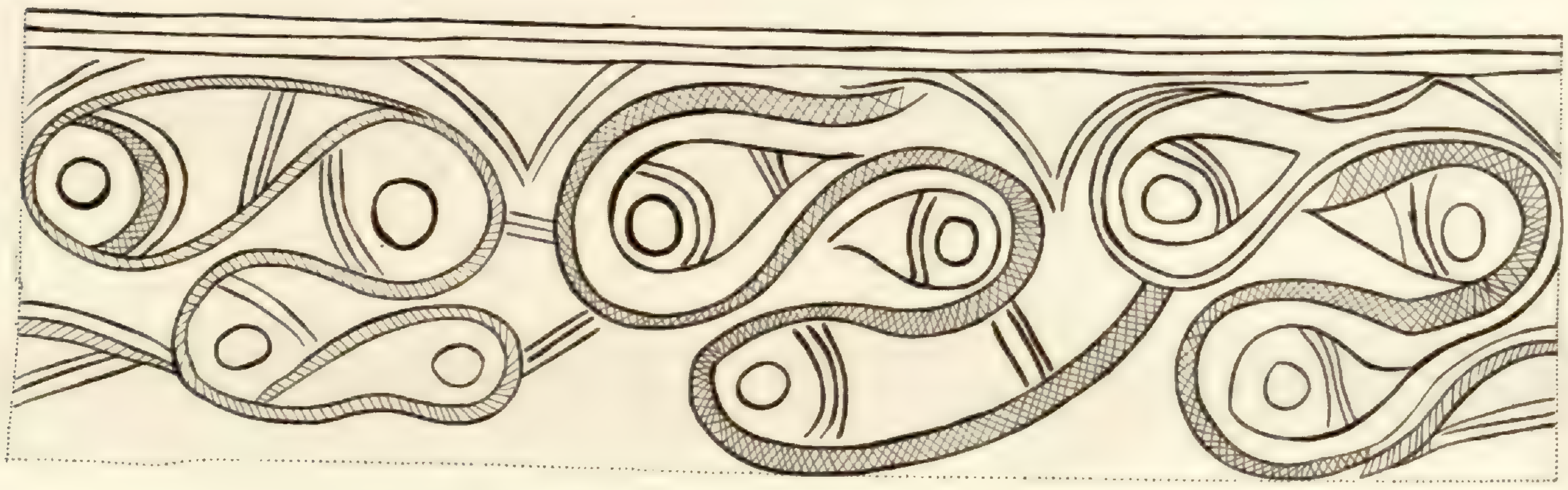


Fig. 165.—Vessel No. 4. Decoration. (About one-third size.)

To the north of the field belonging to Mr. Day is another that formed part of the Ward Plantation at one time, but is now the property of Mr. J. Weinstein, of Bastrop, La. The soil in this field is extremely rich in places, and was so thickly covered with aboriginal debris and artifacts that a collection of more than 80 arrow-points, lanceheads, and knives, all of chert, was made by our party in a comparatively short time.

Many of the points are barbed and are of considerable elegance of form; indeed, over the whole Ouachita valley beautiful projectile points are abundant. Among the points from that region are many of the type described by Mr. Fowke[1] as stemmed, chipped flints, with but one barb, and given by him as coming, among other places, from southwestern Arkansas and Catahoula Parish, La.

The Weinstein Plantation was carefully dug over without finding trace of a cemetery.

Cemetery near Seven Pines Landing, Morehouse Parish, La.

At Seven Pines Landing, otherwise known as Miller Landing, two plantations are divided by the highroad, that of Mrs. T. O. Leavel, of Brodnax, La., being the northernmore.

On a part of the plantation, fallow at the time of our visit, was much evidence of aboriginal occupancy, and at one place, about one-quarter mile NE. from the landing, which seemed slightly higher than the surrounding field, were many small fragments of human bone.

Trial-holes at once came upon burials, and after much digging of additional holes and converging trenches, an irregular area, 33 feet by 42 feet in extent, was defined as that in which the burials lay. This ground, largely clay in places and having admixture of sand in others, was completely dug through by us, following the line of undisturbed clay beneath.

Human remains, just under the surface at times, were encountered at various depths, the deepest being found in a pit whose bottom was about 3 feet from the surface.

The bones were in such condition, having at times but slightly more consistency than moistened sawdust possesses, that the form of burial was hard to determine. Skulls were found singly or in pairs without long-bones in association, in some cases, while in other instances bones were unaccompanied by skulls. On four occasions burials at length were indicated, and one regular bunched burial was encountered, made up of long-bones which had been piled parallel one with another. No cranium was present with this burial.

One of the full-length burials lay at a depth of slightly less than three feet. Later, a circular pit for a bunched burial had been put down, and this pit had encroached upon part of the earlier grave so that the combination of the two had the appearance of a pot-shaped hole with a trough extending from it—the latter part being what remained of the grave of the earlier, or full-length burial.

The bunched burial in this combination consisted of three skulls: one, badly crushed, at the bottom of the pit; one just above it, inverted but having the lower jaw below it, and partly surrounded by three femurs placed diagonally and by fragments of other bones; the third skull lay at some distance from the others.

No other burials were determined, though altogether bones were encountered in forty-two places. No skeletal remains were saved.

[1] "Stone Art," Thirteenth Ann. Rep. Bur. Am. Ethn., fig. 218, p. 156.

Fig. 166.—Ornament of claystone. Seven Pines Landing. (Full size.)

Fig. 167.—Pipe of earthenware. Seven Pines Landing. (Full size.)

Fig. 168.—Pipe of earthenware. Seven Pines Landing. (Full size.)

Fig. 169.—Pipe of earthenware. Seven Pines Landing. (Full size.)

Fig. 170.—Pipe of earthenware. Seven Pines Landing. (Full size.)

Exclusive of pottery, but little in the way of artifacts was present with burials.

With fragments of bone was a chisel 3 inches in length, neatly chipped from a chert pebble, having an edge beautifully ground. Two earthenware vessels lay with this burial.

With another burial was a chisel of a fairly hard, fine grained stone, 3.5 inches in length.

Burial No. 34, an extended skeleton, had two vessels at the head; an earthenware pipe at the left of the pelvis; an ornament (Fig. 166), probably of claystone, having a part extending horizontally at one end, and a decoration consisting of three faint, parallel, encircling lines at the opposite extremity. This ornament, badly broken when found, has since been cemented together.

Four pipes of earthenware came from this cemetery, three certainly associated with burials and the fourth probably having been with human remains at one time. All are shown in Figs. 167 to 170, inclusive.

The vessels of earthenware from this place, thirty-nine in all, lay with burials in most instances, and when they did not, their position was presumably a result of disturbance or was owing to bones formerly with them having disappeared through decay. Their position was usually near the skull, sometimes singly, never more than two together. Several were inverted; in one was the carapace of a tortoise, in fragments. Hardly a vessel was recovered entire, and the great majority not only were crushed into fragments, but also were so disintegrated that they were impossible to preserve. The ware, shell-tempered in most cases, had been insufficiently kneaded, so that the distribution of the tempering material was uneven, and later, presumably, the paste had been insufficiently fired.

Many of the vessels were without decoration, while the ornamentation of others was unambitious in design and rude in execution.

The following vessels are the most noteworthy from this place:

Vessel No. 21, a bottle of dark ware and having a flat base (a characteristic of nearly all the vessels from this place), undecorated, is 11.5 inches in height. The neck, converging somewhat toward the opening, is 6 inches in length.

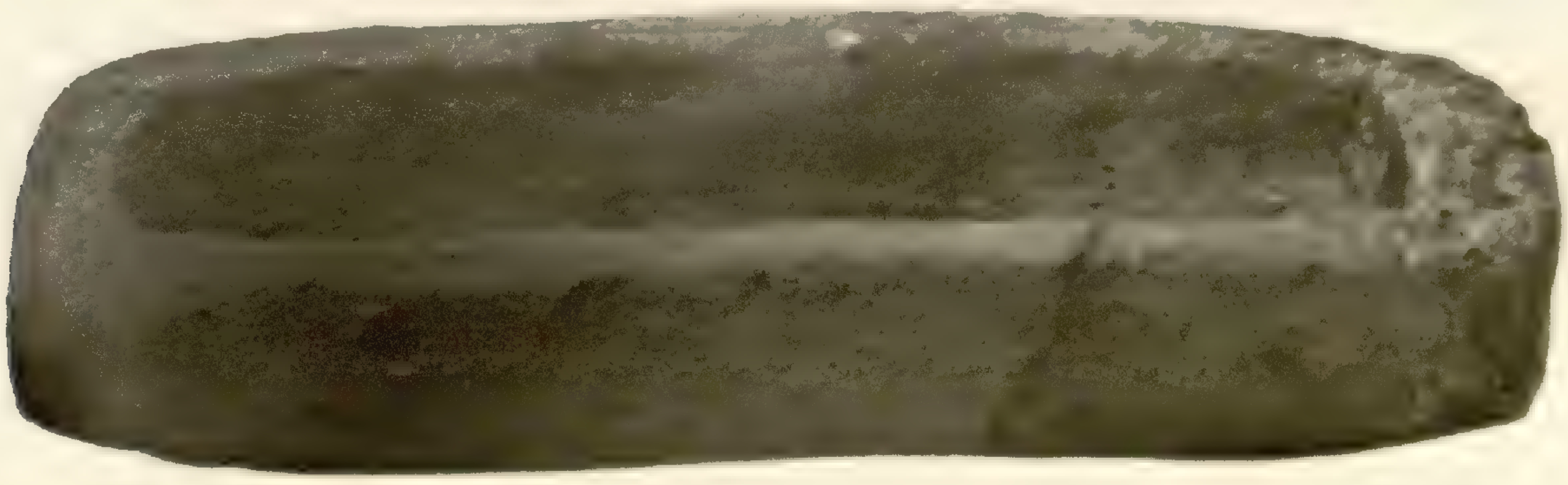


FIG. 171.—Vessel No. 20. Seven Pines Landing. (Length 6.6 inches.)

Vessel No. 20. A trough-shaped vessel of thick, porous, yellow ware, shown in Fig. 171.

FIG. 172.—Vessel No. 15. Seven Pines Landing. (Height 4.5 inches.)

FIG. 173.—Vessel No. 14. Seven Pines Landing. (Diam. 5.6 inches.)

Vessel No. 15. A pot of inferior, dark ware, with flat base, having on the upper part of the body an incised, intertwining meander, and around the neck, bands of chevrons, also incised (Fig. 172).

Vessel No. 30. A pot almost the counterpart of the foregoing with the exception that the one in question somewhat exceeds the other in size.

Vessel No. 14. This vessel, of inferior, yellow ware (Fig. 173), has an incised decoration similar to that on several vessels figured as coming from the Ward Place and elsewhere in the Ouachita valley, and which we shall consider to represent the eye, until something better is suggested.

Several other places on Mrs. Leavel's plantation, which, judging by debris on the surface, were likely to prove places of burial, were carefully dug into by us but without success.

About 1.5 mile, following the road from Seven Pines Landing, is the farm of Mr. T. E. Hudson, who resides nearby.

A field about ten acres in extent, forming part of the property of Mr. Hudson, was acquired by him some years ago from Mr. V. N. Brodnax, living near Brodnax, La.

FIG. 174.—Pendants of hematite. Brodnax. (Full size.)

This field, long under cultivation, has been celebrated for years for its yield of plummet-shaped pendants of hematite, a number having been found by Mr. Brodnax, and at least a dozen by Mr. Hudson, according to his statement—all having been turned up by the plow. There is no history of the finding of human bones on the site, though a cemetery may have been there in the past, the bones having been destroyed through cultivation, the hematite pendants remaining.

One of these pendants, received from Mr. Hudson by Mr. S. J. Harrell, of whom we shall have occasion to speak again in connection with exploration on his property, kindly was presented to us by Mr. Harrell. The specimen, neatly made, 3.5 inches in length, has a countersunk perforation at one end. Another pendant of the same sort was obtained by us from the son of Mr. Hudson. These pendants are shown in Fig. 174.

Much digging in this field was without positive result.

Cemetery near Bray Landing, Morehouse Parish, La.

In a cultivated field forming part of the extensive plantation of Mr. S. J. Harrell, who resides near Mound Landing, and of whom mention has just been made, is a hardly perceptible elevation about one-half mile SSE. from Bray Landing.

Mr. Harrell, who had visited us while we were working at a neighboring plantation and had become acquainted with our methods, heard from employes on his plantation of the finding of bits of bone and of pottery on the elevation to which reference has been made.

Assisted by a friend, Mr. Harrell caused to be dug in this place an excavation about 6 feet by 8 feet in extent, finding numerous skeletal remains, including eight skulls which crumbled upon removal. With these skulls were several pots in small fragments, and a vessel, oblate-spheroidal in shape, having as decoration, incised interlocked scrolls made with a tool causing somewhat the effect of cord-marking. This vessel Mr. Harrell generously offered us, and, in addition, a small "celt" found with some of the bones.

Having ascertained, with the aid of many trial-holes, the area in which human remains were to be found, a circular space about 46 feet in diameter was surrounded by our men and completely dug through, the digging being carried on through sandy clay darkened with organic matter, to a depth where undisturbed yellow clay was encountered. At times this undisturbed clay was but 18 inches down, but occasionally pits from 2 to 3 feet in depth were encountered.

The area excavated included slightly more than the aborigines had devoted to purposes of burial and, of course, surrounded that part of the elevation already dug by Mr. Harrell.

The condition of the bones in this cemetery varied considerably, most of them being badly decayed, while a few were fairly well preserved. Many of the bones, especially the skulls, in addition to the ravages of decay, had suffered through breakage.

The majority of bones in the mound were not in any particular connection, but were scattered throughout, skulls being found with a few bones lying near them and often on them, hence the breakage. Other skeletal remains often lay alone or in small aggregations apart from any skull. Presumably these bones were not held together by ligaments at the time of burial and hence were interred in no particular order, for though some of the bones in this cemetery had been disturbed through cultivation, and some had been scattered by aboriginal disturbance, yet many were found at too great depth for the plow to have reached, and no disturbing graves extended below them.

The bunched burial, or rather the symmetrical bunched burial, where long-bones were piled lengthwise, had not been attempted.

Owing to the bad condition of most of the bones and to the disarrangement to which reference has been made, it was impossible to take exact account of the various burials. However, seventeen burials were exactly noted, all of adults, with two exceptions—but these were a small proportion of the interments present in the mound.

Of the fifteen adult burials, thirteen lay at full length on the back and two were extended, face down.

The heads of all the adult burials were in a southerly direction with the exception of three, which pointed ENE.

At the bottom of a pit in the central part of the cemetery lay Burial No. 16 (the skeleton of a male, we are informed by Dr. Hrdlicka), extended on the back. The state of preservation of the bones of this skeleton was excellent, which is the more remarkable considering the condition of many of the bones in this cemetery. The left radius was somewhat out of place. All the bones of the right hand and some of the bones of the left hand were missing.

Near the skull were many fragments of charcoal and some bits of burnt shell and of calcined bones, which latter have been determined probably to be not human, but to belong to the deer.

A tobacco-pipe lay at the left side of the jaw of this skeleton. At the left shoulder was a bottle; and over the right hip, a bowl. Both the earthenware utensils and the pipe were in an excellent state of preservation, as were the bones of a skeleton lying in the same pit with Burial No. 16, but somewhat above it.

In the soil in this cemetery, sometimes near burials, were pebbles, pebble-hammers, and a small arrowpoint of chert.

A scale of the alligator-gar, probably used as an arrowhead, lay near human remains.

Usually with burials, and often in contact with the skull (though in several instances their exact position was not noted, owing to their falling in masses of soil), were eleven pipes of earthenware, eight of which are shown in Figs. 175 to 182, inclusive.

One of these pipes has two perforations; of the four orifices two are in front of the base on which the bowl rests and one on each side. These perforations have no connection with the hollow part through which the smoke passed, but undoubtedly were used to attach ornaments of some sort to the pipe.

Another of the pipes in this lot has the bowl and the portion intended to receive the stem resting upon a thin platform projecting on all sides. The part of this platform which projects beyond the opening for the stem is a restoration which was made because a corresponding part of the platform extends beyond the bowl.

There were found in this cemetery twenty-six vessels of earthenware, of which only two were intact. We came upon also a number of parts of vessels that had been broken and scattered by disturbance, recent or aboriginal. The vessels were all associated with human remains, and in every case but two, were in proximity to crania.

The vessels, as a rule, were found singly, and never exceeded two with a single burial. The ware of these vessels, some of which had shell-tempering while some were without it, was, as a rule, inferior and readily acted upon by the dampness of the ground in which they lay. Many were disintegrated beyond repair.

In form the vessels had flaring necks as a rule, and without exception, we believe, had flattened bases. A single bottle was found. No pigment had been used on the vessels, and when decoration was present it was, as a rule, incised and of uneven execution, the designs being the scroll, concentric circles, and commonplace arrangements of parallel, straight lines.

FIG. 175.—Pipe of earthenware. Bray Landing. (Full size.)

FIG. 176.—Pipe of earthenware. Bray Landing. (Full size.)

FIG. 177.—Pipe of earthenware. Bray Landing. (Full size.)

FIG. 178.—Pipe of earthenware. Bray Landing. (Full size.)

FIG. 179.—Pipe of earthenware. Bray Landing. (Full size.)

FIG. 180.—Pipe of earthenware. Bray Landing. (Full size.)

FIG. 181.—Pipe of earthenware. Bray Landing. (Full size.)

FIG. 182.—Pipe of earthenware. Bray Landing. (Full size.)

FIG. 183.—Vessel No. 25. Bray Landing. (Height 5.25 inches.)

Vessel No. 13. A hemispherical vessel of porous, yellow ware, having a flat base, and a circular aperture about one inch in diameter, near which is an incised circle with a diameter of .25 of an inch. This vessel represents a gourd, the circle showing where a stem is supposed to have been detached.

Vessel No. 11. A vessel of coarse, yellow ware, 2.7 inches in height, much resembling a gourd-form and similar to one from the cemetery on the Keno Plantation, with the exception that the vessel under description is covered with a rude, lined decoration and has had a base of some kind, now missing.

Vessel No. 25. A bottle of gray ware (Fig. 183), with flat base, rather roughly decorated with encircling, alternate ridges and depressions, similar, though inferior, to a vessel from Missouri, figured by Dr. Evers.[1]

MOUND AND CEMETERY ON THE MOUND PLACE, MOREHOUSE PARISH, LA.

In a large cultivated field, in sight from Mound Landing, on property of Mr. J. Howard Michie of Mer Rouge, La., is a mound 22 feet in height, evidently domiciliary.

The mound, about 140 feet square, at the base, has a summit-plateau 50 feet square, approximately.

[1] "Archæology of Missouri," Pl. III, Fig. 210.

The sides of the mound, two of which are parallel with the bayou, do not face the cardinal points nor are the corners of the mound directed toward them.

Eleven trial-holes in the summit-plateau yielded neither bone nor artifact.

About 75 yards east of this mound is a small pool of water which, no doubt, marks the site of an excavation made at the time of the building of the mound.

In sight, in a northerly direction from the mound, is a ridge ending in an eminence about 7 feet in height, which evidently has been greatly spread by continued cultivation. Thickly scattered over this ridge were fragments of pottery (including parts of several earthenware pipes), seventeen small arrowheads of chert, chert chips and other debris. A considerable number of trial-holes in this ridge were without return.

Much digging was done by us in other parts of the field surrounding the mound, but without success except in one instance. Immediately beside the fence which separates the field from the highroad, about 100 yards N. by W. from the principal mound, was the remainder of a dwelling-site that had been mainly cut away by the road. The part which remained had been so greatly spread by long-continued cultivation that it was but little above the level of the field.

Trial-holes at this place came at once upon burials and pottery, and the small, irregular area adjoining the fence was then completely dug out.

Much disarrangement was apparent in burials found near the surface, and many skeletons, no doubt, had been entirely plowed away. Of fragmentary remains no account is taken in our enumeration.

Thirteen skeletons were found, all of adults, all extended on the back, the heads directed toward various points. In addition, there were two layers of bones, and a bunched burial formed from the skeleton of one individual. The layers contained respectively fourteen and sixteen crania. In the larger number are included four skulls not immediately placed with the rest, but lying somewhat above them in the same pit.

Also were found singly several skulls unconnected with other parts of the skeleton, and with two or three of these skulls were earthenware vessels. Some of the crania were at a depth too great to have been disturbed by cultivation. Possibly the position of these skulls was the result of aboriginal disturbance.

All burials, seemingly had been made in pits, the deepest of which was 46 inches.

The condition of the bones was such that none was preserved with the exception of part of a cranium.

Burial No. 11, an extended skeleton, had, at the skull, a collection of objects more numerous than interesting, as follows: twenty pebbles; one bit of earthenware; three flakes of chert; a flat mass of sandstone; a small, flat fragment of sedimentary rock, apparently; a small, oblong mass of petrified wood.

An arrowhead or knife, of chert, lay apart from human remains.

With the burials were fourteen vessels of earthenware, all in fragments, with two or three exceptions. The vessels, as a rule, lay near skulls, though one was

at the right knee of a skeleton and one at the upper part of a left femur. In another instance two vessels with a skeleton lay one at the right shoulder and one at the right knee.

The ware, with one exception, is without shell-tempering; and no decoration in color is present save in a single instance.

At this place, except in one case, there was little departure from the commonplace, in either form or decoration of earthenware vessels.

Certain of these vessels will now be particularly described.

Vessel No. 1, the body of a bottle from which the neck has been removed through contact with a plow. The ware is coarse and unevenly fired. The base is flat. The decoration consists of a five-pointed star, rudely modeled in relief, having a diameter of about 6.5 inches.

Vessel No. 7. A bottle of gray ware, having a flat base and a most unusual shape of body—possibly a compound form (Fig. 184). The decoration consists of series of curved trailed lines above the spaces in the lower part of the body.

FIG. 184.—Vessel No. 7. Mound Place. (Height 8.4 inches.)

Vessel No. 3, a pot 7.2 inches in diameter, badly broken. The decoration, incised with a tool but having somewhat the effect of cord-marking, consists of vertical, parallel lines below the neck, under which are series of eight concentric, festooned lines and figures of triangular outline, each made up of parallel, horizontal lines, decreasing in length toward the apex.

In a field adjacent to the one in which were the mound and cemetery we have described, a number of trial-holes were put down, resulting in the finding of one skeleton at full length on the back, the head directed NE. The skull, in good condition, was sent to the National Museum.

Cemetery at Linn Grove Landing, Morehouse Parish, La.

In a cultivated field at Linn Grove Landing, near the road which borders the bayou, on property of Mr. N. H. Huff, living nearby, are many evidences of aboriginal occupancy. A number of trial-holes put down at this place yielded nothing. It was apparent that much of the dark soil in which burials might be found had disappeared through cultivation and wash of rain, and we were assured by Mr. Huff that in the past many human bones had been plowed up at this place.

Immediately outside a fence enclosing that part of the field where the cemetery is said to have been was a small space covered with grass, between the fence and the highroad. Here we found one extended skeleton and a number of human bones considerably scattered.

Mound near Linn Grove Landing, Morehouse Parish, La.

Following the road leading out from Linn Grove Landing, about 1.5 mile, one comes to a mound in full view from the road, on property of Mr. A. K. Watt, who resides on his plantation nearby.

This mound, about 8 feet in height and 65 feet across its circular base, built largely of clay, had been greatly dug into previous to our visit. Considerable digging by us in such space as remained, and careful examination of parts where previous work had been done, yielded no indication that the mound had been used for burial purposes.

Mounds near Wilmot, Ashley County, Ark.

Two mounds of medium size, evidently domiciliary, one said to contain modern burials, and both apparently much dug away previous to our visit, one near Wilmot, the other on the river bank somewhat above, were not investigated by us.

Mound at Noble Landing, Ashley County, Ark.

Between the highroad and the bayou, in full view from the water, at Noble Landing, on property of Mr. T. A. Barnes, who lives on the place, is a mound 4.5 feet in height and 42 feet across its circular base. This mound, mainly of clay, was dug out centrally by us, and, in addition, was trenched from the margin inward without encountering bone or artifact.

Mounds on the Carlock Place, Ashley County, Ark.

On the roadside which borders the bayou is a symmetrical mound on the Carlock Place, 12.5 feet high and 90 feet across its somewhat irregularly-circular base. As this mound had been used as a cemetery in recent times, the owner, Mr. T. A. Jackson, of Hamburg, Ark., preferred that it be not disturbed. Mr. Jackson, however, placed at our disposal all the level ground of the plantation, on which was an extensive dwelling-site thickly strewn with bits of musselshell, fragments of pottery, and other debris.

A large number of trial-holes, sunk in all parts of this site, showed the superficial, loamy soil to be without burials at the present time.

In the field, in view from the road, is a small mound of clay, which also contains modern burials.

Mound on the Sherrer Place, Ashley County, Ark.

The Sherrer Place, belonging to Dr. F. M. Sherrer, of Portland, Ark., is about two miles in a straight line WSW. from Portland, but on the opposite side of the river.

Behind the dwelling, which is on the road bordering the bayou, are the remains of a low mound of clayey sand, over which cultivation has been carried on for many years. In addition to the plowing, which has reduced the mound almost to the general level, the mound has been largely dug into in the past.

Ten trial-holes, which were greatly extended later so as to take in almost the entire mound, were put down by us. In a number of places bones, including five or six skulls, were encountered, some fragmentary through decay, some through recent disturbance. With these bones were no artifacts.

Apart from human remains was a small bowl with a flat base, coarsely made and without decoration, which fell into fragments on removal.

Mound near Portland, Ashley County, Ark.

About one-half mile from Alligator Point on the bayou, whence one can reach the town of Portland by following the road one mile approximately, is a mound in a field, in sight from the point.

This mound, small and evidently belonging to the domiciliary class, judging from its shape, had been dug into centrally to a considerable extent before the time of our visit, by a seeker after treasure, it was said. The mound, which is made of raw, yellow clay, was not investigated by us, some reluctance having been shown by the owner to grant us permission to dig, and but little pains having been taken by us to induce him to do so after we had inspected the mound.

REPORT

ON AN

Additional Collection of Skeletal Remains, from Arkansas and Louisiana

(Made, and presented to the National Museum, in 1909, by Mr. Clarence B. Moore)

BY

DR. ALEŠ HRDLIČKA

In charge of the Division of Physical Anthropology, United States National Museum

MAP OF LOWER PART OF THE ARKANSAS RIVER, ARKANSAS.

Scale in miles

0 5 10 15 20

MAP OF PART OF THE OUACHITA VALLEY AND BLACK RIVER.

Scale in miles

0 10 20 30 40 50

1909

REPORT ON AN ADDITIONAL COLLECTION OF SKELETAL REMAINS, FROM ARKANSAS AND LOUISIANA.

(Made, and presented to the National Museum, in 1909, by Mr. Clarence B. Moore.)

By Dr. Aleš Hrdlička.

In charge of the Division of Physical Anthropology, United States National Museum.

I.

The material to which this report applies consists of 58 crania, and of numerous bones from the same as well as from other skeletons. In all there are ninety-one lots, thirty-seven of which are from Arkansas, and fifty-four from Louisiana. Those from Arkansas come from a single burial place, while the bones from Louisiana were gathered from seven different localities. Details concerning these places, the modes of burial, and the archæology of the graves, are given in the preceding Memoir by Mr. Clarence B. Moore. The localities in which the skeletal remains were found are shown on the accompanying sketch map, which gives also those from which came the skeletal material described by the writer in Mr. Moore's last year's report[1] and to which frequent reference will be made in this paper.

The skulls and bones show various states of preservation, but for the greater part they are more or less imperfect. None of the specimens is mineralized, or much devoid of animal matter. All, with one exception, are plainly Indian; the exception, a skull of a female about fifty years of age, with moderate "flat-head" deformation, is negroid. This skull, in all probability, is that of a negro-Indian mixed-blood, and will not receive further consideration.

The majority of the crania, both from Arkansas and from Louisiana, exhibit artificial deformation. The deformation represents both of the two varieties, namely, occipital flattening or cradle-board compression,[2] and fronto-occipital flattening ("flat-head" deformation). The forms occur together in some of the localities, but owing to some insufficient method practised to produce the fronto-occipital flattening, they are not always clearly distinguishable. Each variety of deformation predominates in, but is not limited to, a certain type of people, indicating adoption of customs in this regard by some of the groups.

As to anthropological identifications, there is, notwithstanding the comparatively large number of specimens, little evidence on which conclusions can be based. The crania that had been artificially altered in form are to a large extent useless

[1] "Report on a Collection of Crania from Arkansas." Journ. Acad. Nat. Sci., Phila., 1908, XIII, pp. 558–563.

[2] See writer's article on "Artificial Head Deformation," Handbook of American Indians, Bull. 30, Bureau of Amer. Ethnol., Wash., 1907, Part 1, p. 96.

for this purpose. Fortunately there are also skulls that exhibit only slight deformation, and a small number of wholly normal ones. These indicate, for the region covered, two distinct types of Indians.

The predominating type is that of the brachycephals, known partly from the previous report. These people, it appears from the material last collected, ranged in stature from moderate to well-developed, with good though not pronounced muscular development. They were probably the people among whom prevailed, and who communicated to their neighbors, the intentional fronto-occipital deformation.

The other type, less well represented, indicates Indians of stature and strength similar to those of the people just mentioned, but with oblong, mesocephalic to dolichocephalic skulls. They were, in all probability, remnants of a relatively large local strain of dolichocephals mixed with the more numerous round-headed people. They exhibit the occipital, cradle-board head-flattening, but they practised also fronto-occipital compression. The physical characteristics of these people, so far as they can yet be isolated, approach, on one hand, those of the more northerly tribes of Missouri, Illinois, and parts of Tennessee and Kentucky, and, on the other, those of more westerly and southwesterly tribes, represented in northern Texas and especially by the oblong-headed type among the Pueblo Indians. The prevalent occipital flattening of the skull would point likewise to a connection with the southwest and the northeast. However, no great weight can be placed on this latter feature alone, for it represents a custom which could be communicated from one tribe to another, rather than a fixed, organic, hereditary condition.

In addition to the collections referred to, there were found, on examination of the older gatherings from Arkansas and Louisiana in the National Museum, a few crania which resemble very closely the sub-type of the eastern Algonquians.

Barring the element last mentioned, the tribal mixture under consideration, in all its more important characteristics, is closely related to the people of Arkansas and Jefferson counties, Arkansas, whose skeletal remains Mr. Moore uncovered during his investigations of the year before. The short-headed type is doubtless identical in both series.

Numerous long-bones and several of the skulls in Mr. Moore's collection of 1909 give manifest signs of a constitutional disease, seemingly syphilis. Other specimens from the collection, now partly in the National Museum and partly in the Army Medical Museum, show osteo-arthritis, marginal exostoses, and effects of fractures or dislocations; there are two tibiæ with abnormal curvature, and four bones with lesions indicating localized suppurative processes. However, notwithstanding the specimens last mentioned, there appear no definite signs of rickets or of tuberculosis, and no instance occurs of bone tumor or of necrosis of bone.

On account of the varied character of the material, the detailed report which follows must necessarily deal with the specimens by localities only. It gives numerous results of measurements and observation, both interesting and important, which have not been touched upon in the preceding remarks and which show the value of Mr. Moore's most recent collection.

Nevertheless, the data, even when supplemented with those bearing on the older collections in the National Museum, from this part of the country, fall far short of covering the territory of the two States, and allow but little perspective in point of time. They afford, however, a substantial step toward the elucidation of the anthropology of Arkansas and Louisiana, and should stimulate further careful collection of the skeletal remains of the aboriginal inhabitants of these regions.

II.

ARKANSAS.

Mr. Moore's collection from Arkansas in 1909 was made at Boytt's Field, Union county, and comprises the list of specimens given below.

Sexual recognition offers, as usual, some difficulties, but owing to the presence in many cases of long- and other bones, it is possible to carry the identification to within a very small margin of possible error. In age estimates, the uncertain "approximate age in years," such as was employed in last year's report, is replaced by references to defined periods of life, determinations of which are safe and scarcely less serviceable.

SKULLS AND BONES FROM ARKANSAS.

Locality	Specimen	Original No.	Museum No.	Sex	Period of Life*
Boytt's Field, Union Co.	Bones	A	255.133	Female	Adult
"	"	"	.133a	Male	"
"	Skull and bones	2	.123	"	Young adult
"	"	3	.125	"	Middle-age adult
"	Skull	4	.152	"	"
"	Skull and bones	5	.124	"	"
"	Skull	6	.144	Female	"
"	Bones	7	.132	Male	Adult
"	Skull and bones	8	.122	Female	Middle-age adult
"	"	10	.121	Male	"
"	Bones	10	.121a	"	Adult
"	Skull	11	.130	Female	Young adult
"	Skull and bones	12	.143	"	Middle-age adult
"	"	13	.127	Male	Near adult
"	Bones	14	.139	"	Adult
"	Skull and bones	17	.126	"	Young adult
"	"	18	.129	Female	Middle-age adult
"	"	19	.141	Male	Aged adult
"	Bones	20	.134	"	Adult
"	"	21	.138	"	"
"	"	21	.138a	"	"
"	Skull and bones	22	.120	Female	Middle-age adult
"	Bones	23	.131	Male	Adult
"	Skull	24	.145	"	Middle-age adult
"	Bones	28	.142	"	Adult
"	"	32	.140	"	"
"	"	33	.136	"	"
"	"	34	.135	"	"
"	Skull	36	.151	Female	Middle-age adult
"	Skull and bones	37	.119	Male (?)	Young adult
"	Bones	40	.137	Female	Adult
"	Skull	41	.147	"	Middle-age adult
"	"	43	.149	Male	"
"	Skull and bones	52	.128	"	Young adult
"	Skull	53	.146	Female	Middle-age adult
"	"	54	.150	Male	"
"	"	55	.148	Female	Aged adult

* "Young adult" = 23-40 years of age: basilar suture closed; eruption of permanent teeth finished; wear of teeth slight to moderate; no synostosis externally in the normal sutures of the cranial vault.

"Middle-age adult" = 40-55 years of age: teeth worn off moderately to medium; various, generally minor, grades of synostosis externally in the sutures of the vault.

"Aged adult" = exceeding 55 years of age: teeth worn off considerably; synostoses in sutures advanced or complete.

As seen from the table, the specimens represent 24 male and 12 female full-grown individuals. The predominance of males may be accidental.

Of crania, 13 males and 10 females are represented. Among the male skulls, 3 are normal, 6 show slight to pronounced occipital and 4 slight to considerable fronto-occipital flattening; while among the females 3 also are normal, 2 show occipital flattening, and 5 fronto-occipital compression. Additional details regarding the deformations will be found in the first table of measurements.

Five of the crania and numerous bones show indications of syphilis, arthritis, or other pathological conditions; an itemized account of these forms is given in a succeeding chapter.

There are only a few anomalies of a more important nature, even if the teeth and dentition are included in the consideration. In male skull No. 255.119 the basilar process shows on the right side a pronounced lateral fissure to within 0.8 cm. of the median line. In male skull No. 225.124 the right nasal bone, triangular in shape, reaches only a little above the middle of that on the left, its absence

Crania from Arkansas—Measurements Relating to Form

Males

Museum No.	Deformation	Diameter antero-posterior maximum	Diameter lateral maximum	Basion-bregma height	Cephalic index	Height-length index	Height-breadth index
		cm.	cm.	cm.			
255.119	....	16.7	14.7	14.1	*88.0*	*84.4*	*95.9*
.126	....	17.6	14.8	14.0	*84.1*	*79.5*	*94.6*
.149	....	17.3	14.3	13.5	*82.7*	*78.0*	*94.4*
.121	Considerable occipital compression	(15.7)	(15.2)	(13.7)	*?*	....	....
.123	Moderate occ. comp.	(16.9)	(14.6)	?	(Probably mesocephal)	....	....
.124	Medium fronto-occ. comp.	(16.4)	(15.7)	(14.3)	*?*	....	....
.125	Slight occ. comp.	(17.3)	(14.2)	(13.8)	Meso- or low brachycephal)	....	....
.127	Traces of frontal with considerable occ. comp.	(15.9)	(15.4)	(14.6)	*?*	....	....
.128	Medium fronto-occ. comp.	(16.2)	(15.9)	?	*?*	....	....
.141	Moderate occ. comp.	(17.6)	(15.1)	(14.8)	(Nearly brachycephal)	....	....
.145	Pronounced occ. comp.	(17.3)	(15.7)	?	Probably mesocephal)	....	....
.150	Moderate lateral occ. comp.	(17.7)	(14.8)	(14.3)	Meso- or low brachycephal	....	....
.152	Pronounced fronto-occ. comp.	(16.9)	(16.1)	(14.5)	*?*	....	....

farther up being compensated partly by the left nasal and partly by the nasal process of the right superior maxilla. In male skull No. 225.141 the glenoid fossæ, especially the right, are unusually narrow antero-posteriorly.

Dental and numerous other minor anomalies will be referred to later.

In their anthropological characteristics the bones from Boytt's Field do not show differences, either in proportions or in form, clearly enough to enable separation into more than one type. Yet the skulls are not homogeneous. All the normal crania, and a number of those the shape of which has been artificially altered, belong clearly to the brachycephalic type of people known already from the Menard and Greer cemeteries. A number of the deformed skulls, however, show distinctly that, were it not for the artificial shortening, they would have to be classed as mesocephalic or even as dolichocephalic. It is these skulls which remind one so forcibly of the cranial type known from some of the Pueblos. In the further treatment of the material it would be desirable to separate these skulls and the related bones from the crania and bones of the brachycephals; but, as the identification of these specimens, and particularly of the bones from the skeletons where no skull is present, is uncertain, and as there are probably also present intermediate forms due to admixture, such separation is not practicable.

Measurements.—The data obtained by measuring the skulls have been separated, as in last year's report, into several convenient groups. The tables (pp. 176, 177) present those that relate more directly to the form of the skull.

CRANIA FROM ARKANSAS—MEASUREMENTS RELATING TO FORM
FEMALES

Museum No.	Deformation	Diameter antero-posterior maximum	Diameter lateral maximum	Basion-bregma height	Cephalic index	Height-length index	Height-breadth index
		cm.	cm.	cm.			
255.120	....	16.7	13.9	? (fair)	*83.2*	?	?
.143	....	16.8	13.8	13.6	*83.1*	*80.9*	*98.5*
.148	....	17.0	14.4	13.6	*84.7*	*80.0*	*94.4*
.122	Moderate fronto-occ. comp.	(16.3)	(15.0)	?	?	....	....
.129	Moderate occ. comp.	(16.6)	(about 14.3)	(about 14.5)	(Meso- or dolichocephal)	....	....
.130	Slight frontal with moderate occ. comp.	(15.8)	(14.6)	(13.6)	?	....	....
.144	Slight frontal with pronounced occ. comp.	(15.4)	(15.3)	(13.6)	?	....	....
.146	Slight fronto-occ. comp.	(16.1)	(14.6)	?	(Probably brachycephal)	....	....
.147	Slight fronto-occ. comp.	(16.9)	(14.7)	(12.7)	?	....	....
.151	Slight occ. comp.	(16.6)	(14.7)	?	?	....	....

The non-deformed skulls, it is seen, besides being rounded, are all relatively high, in which respect they further resemble those from Arkansas and Jefferson counties, described in last year's report; and there can be no doubt that they belong to the same general group of people. From additional material in the National Museum, it appears that the same type prevailed also in Drew and Mississippi counties, Arkansas.

The deformed specimens show varying grades of compensation in breadth and height for the artificially diminished length, the skull acting under the process much like an elastic bag filled with liquid. The several deformed crania which permit the discernment of a more oblong type represent doubtless a mixture of the above, dominant, with a strong additional tribal element. Similar oblong heads occur also in parts of Drew and Mississippi counties. Furthermore, from Pecan Point, and from near Bardstone, in the latter county, there are extant individual non-deformed skulls, of an unknown period, presenting the type of the eastern and southeastern Algonquian crania.

Size.—The principal dimensions of the crania from Boytt's Field agree fairly well with those observed in the skulls from the Menard and Greer cemeteries, but

MEASUREMENTS OF THE ARKANSAS CRANIA RELATIVE TO THEIR SIZE.

Museum No.	Sex	Deformity	Capacity*	Cranial module (mean diameter)	Circumference (above supra-orbital ridges)	Nasion-opisthion arc	Thickness of left parietal (above squamous suture)
			c.c.	cm.	cm.	cm.	mm.
255.119	Male	None	1475	15.17	50.1	35.0	4–6
.126	"	"	? (fair)	15.47	50.9	35.0	5
.149	"	"	? (submedium)	15.03	49.0	35.0	4–6
.121	"	Occipital flattening	1310	14.87	48.5	?	4–6
.123	"	" "	? (medium)	?	49.1	36.2	4–6
.124	"	Fronto-occ. flattening	1480	15.37	49.3	34.1	4–6
.125	"	Occipital flattening	1315	15.10	49.3	35.7	4–6
.127	"	Fronto-occ. flattening	1455	15.30	48.0	34.4	4–6
.128	"	" "	? (fair)	?	49.3	?	4–6
.141	"	Occipital flattening	1670	15.83	52.7	37.3	5–6
.145	"	" "	? (medium)	?	52.3	?	4–6
.150	"	" "	1470	15.60	50.1	35.5	5–7
.152	"	Fronto-occ. flattening	? (fair)	15.83	51.3	34.3	5–7
.120	Female	None	? (medium)	?	47.5	33.3	4–6
.143	"	"	"	14.73	47.7	35.0	5–7
.148	"	"	? (fair)	15.00	49.6	35.1	4–6
.122	"	Fronto-occ. flattening	? (medium)	?	48.2	32.7	5
.129	"	Occipital flattening	"	15.13	49.0	35.2	5–7
.130	"	Fronto-occ. flattening	"	14.67	47.7	34.0	4–6
.144	"	" "	"	14.77	48.3	?	5–7
.146	"	" "	"	?	48.5	?	4–6
.147	"	" "	"	14.77	49.5	34.2	4–6
.151	"	Occipital flattening	1280	?	48.8	?	(6–7)
Averages (with minima and maxima)	Males	....	7)† *1455* (1310–1670)	10) *15.36* (14.87–15.83)	13) *50.0* (48.0–52.7)	10) *35.2* (34.1–37.3)	13) *5* (4–6 to 5–7)
	Females	....	....	6) *14.84* (14.67–15.13)	10) *48.5* (47.5–49.6)	7) *34.2* (32.7–35.2)	9) *5.3* (4–6 to 5–7)

* Measured with dry mustard-seed in accordance with the writer's method described in *Science*, N. S., xvii, June 26, 1903, pp. 1011–1014.
† Number of cases.

there are also a few that are more capacious. Only one of the specimens, however, can be termed large, namely that of 1670 c.c. capacity. In 15 additional Arkansas crania in the National Museum, in which it could be determined, the capacity ranges in 9 males from 1360 to 1600 c.c., and in 6 females from 1180 to 1395 c.c.

The capacity of the skull generally bears a relation to the stature of the individual, and the stature can be judged approximately from the long-bones, particularly the humerus and the femur. One or both of the femora are present in five of the males with known skull capacity. Their length and relations to the capacity are as follows:

RELATION OF SKULL CAPACITY TO STATURE

Male Skull No.	Cranial Capacity	Bicondylar length of right femur of same individual	Femoro-cranial index (= c. c. of skull capacity per 1 cm. of femoral length)
	c. c.	cm.	
255.121	1310	45.7	*28.7*
.125	1315	43.3	*30.4*
.127	1455	42.1	*34.6*
.124	1480	46.0	*32.2*
.141	1670	48.2	*34.6*
Averages	*1446*	*45.1*	*32.1*

These interesting data unfortunately apply to too few specimens to be of great value, particularly for type comparison. It may be stated, however, that the average bicondylar length of the right femur in the white American male of the Eastern states approaches 45.0 cm., and the cranial capacity 1500 c.c., which would give an average femoro-cranial index of about 33.3, a figure slightly higher than that in these Indians.

The average module (mean diameter of the skull), the greatest horizontal circumference above the ridges, and the nasion-opisthion arc, all show in both sexes slightly lower averages than in whites. The thickness of the parietal bone is not excessive, but it will be noticed that it averages slightly more in the females than in the males, even if we omit the unusually thick skull No. 255.151. This is not general among Indians, although rather thick female crania are met with in all the larger Indian skeletal collections.

The relation in the two sexes, of the average module, and of the circumference and antero-posterior arc, is almost identical for the three measurements, being as 96 (females) to 100 (males) for the module, and as 97 to 100 for both the other measurements.

For capacity, however, the difference in the relation would be larger.

Facial parts.—It is regrettable that the facial parts of many of the skulls, including nearly all the females, are imperfect or wanting. Nevertheless, those that remain show a number of features of considerable interest. In the first place the facial measurements, and especially the indices, are considerably alike throughout the series, notwithstanding evident diversity in the form of the crania. Sec-

ondly, both the upper and the lower facial index are perceptibly lower than in the series of Arkansas skulls described in Mr. Moore's last report. This is due to the generally lesser height of the face, *i. e.*, the height of the alveolar point to nasion line, in the present series.

The lower jaw also is relatively low, so that the average index of the upper face is slightly more leptoprosopic than that of the face as a whole.

The breadth of the face is quite moderate throughout the series. In two of the males a deformation of the vault has a decided effect on the bizygomatic diameter and consequently on the facial indices. These measurements and indices are bracketed in the accompanying table.

MEASUREMENTS OF THE ARKANSAS CRANIA WITH REFERENCE TO THE FACIAL PARTS

Museum No.	Sex	Deformity of vault*	Total height of the face	Alveolar point-nasion height	Diameter bizygomatic maximum	Facial index, total	Facial index, upper	Nose: height (mean of that from nasion to the nasal notches)	Nose: breadth (maximum)	Nose: index	Orbits: height,† right	Orbits: height,† left	Orbits: breadth,† right	Orbits: breadth,† left	Orbits: index, right	Orbits: index, left	Palate: external length ‡	Palate: external breadth ‡	Palate: index ‡
			cm.	cm.	cm.			cm.	cm.		cm.	cm.	cm.	cm.			cm.	cm.	
255.119	Male	——	11.6	6.9	13.8	*84.1*	*50.0*	5.0	2.55	*51.0*	3.45	3.60	4.00	3.95	*86.2*	*91.1*	5.5	6.2	*112.7*
.126	"	——	12.2	7.3	14.3	*85.3*	*51.0*	5.2	2.8	*53.8*	3.50	?	4.10	?	*85.4*	?	(6.2)	?	?
.149	"	——	11.3	6.9	13.7	*82.5*	*50.4*	4.7	2.4	*51.1*	3.15	3.30	4.00	4.00	*78.7*	*82.5*	5.4	6.1	*113.0*
.121	"	o. c.	?	6.9	(14.2)	?	(*48.6*)	4.9	2.6	*53.1*	3.45	3.50	3.90	3.90	*88.5*	*89.7*	5.3	6.5	*122.6*
.123	"	o. c.	12.0	7.1	?	?	?	4.8	2.45	*51.0*	?		?		?		5.3	6.5	*122.6*
.124	"	f-o. c.	?	7.1	14.0	?	*50.7*	5.0	2.45	*49.0*	3.80	3.70	4.00	3.95	*95.0*	*93.7*	6.0	6.7	*111.7*
.125	"	o. c.	11.8	7.2	13.9	*84.9*	*51.8*	4.9	2.6	*53.1*	3.50	3.50	4.20	4.10	*83.3*	*85.4*	5.8	6.3	*108.6*
.127	"	f-o. c.	11.7	6.9	13.3	*88.0*	*51.9*	4.8	2.35	*48.9*	3.10	3.15	3.90	3.75	*79.5*	*83.7*	5.4	6.7	*124.1*
.128	"	f-o. c.	?	?	?	?	?	?	2.35	?	?		?		?		5.6	7.1	*126.8*
.141	"	o. c.	11.5	6.8	13.6	*84.6*	*50.0*	4.85	2.45	*50.5*	3.65	3.55	4.00	4.05	*91.2*	*87.8*	5.8	6.5	*112.1*
.145	"	o. c.	?	?	?	?	?	?	?	?	?		?		?		5.8	7.1	*122.4*
.150	"	o. c.	11.7	7.3	14.1	*83.0*	*51.8*	5.35	2.5	*46.7*	3.30	?	4.10	?	*80.5*	?	5.5	6.3	*114.4*
.152	"	f-o. c.	12.0	7.2	(15.2)	(*78.9*)	(*47.4*)	5.25	2.8	*53.1*	3.70	3.80	4.10	4.10	*90.2*	*95.1*	5.5	6.7	*121.8*
255.120	Female	——	11.2	7.0	12.5	*89.6*	*56.0*	4.8	2.5	*52.1*	?		?		?		?	?	?
.143	"	——	10.9	?	?	?	?	4.4	2.6	*60.0*	?		?		?		?	?	?
.148	"	——	?	?	?	?	?	?	?	?	?		?		?		?	?	?
.122	"	f-o. c.	?	?	?	?	?	?	?	?	?		?		?		?	?	?
.129	"	o. c.	11.9	7.3	?	?	?	4.9	2.7	*55.1*	3.40	3.25	3.90	3.90	*87.2*	*83.3*	6.0	6.7	*111.7*
.130	"	f-o. c.	11.1	6.5	?	?	?	4.7	2.5	*53.4*	?		?		?		5.3	6.2	*117.0*
.144	"	f-o. c.	?	?	13.2	?	?	?	?	?	?		?		?		?	?	?
.146	"	f-o. c.	?	?	?	?	?	?	2.2	?	?		?		?		?	?	?
.147	"	f-o. c.	?	?	?	?	?	?	?	?	?		?		?		?	?	?
.151	"	o. c.	?	?	?	?	?	?	?	?	?	3.35	?	3.65	?	*91.8*	?	?	?

* O. c. = occipital compression; f-o. c. = fronto-occipital compression. † Broca's method. ‡ Turner's method.

The nasal index is mesorhynic in the main, but reaches to slight platyrhyny. The females appear to be somewhat more platyrhynic than the males, due principally to a lesser height of the nose. In the skulls from the Menard and Greer cemeteries the nasal index is almost invariably lower, due to a greater height of the nose, accompanying the greater height of the upper face. In so far as the breadth of the nose is concerned, the last year's series of crania and those now under consideration are much alike.

In the nasal dimensions and index there is no perceptible difference between the oblong and the rounded skulls from Boytt's Field.

The orbital measurements present nothing extraordinary. The indices show rather a wide range. This is probably due in part to the existence of the vault

deformations which, when present in a high degree, are not without effect on the shape of the orbits. The measurements and indices of both orbits are given in the present report for the purpose of showing the very frequent differences in the same observed in, but by no means limited to, the Indians. These differences are somewhat characteristic, in that the left orbit is frequently the higher and narrower, giving an index greater than in the right; but there are also cases in which the condition is reversed. A similarly great variation in the orbital index is noticeable in the skulls from Arkansas described in the last report.

The palate again shows predominantly brachyuranic. As in the case of all the other facial measurements, there can be isolated no distinct types corresponding to the separate forms of the skull.

Other Measurements.—Special attention has been given to the determination of prognathism, and as it is important to show separately the alveolar slanting, an additional measurement used in the series described last year, namely, a diameter from basion to the middle of the nasal notches, has been employed.

The total facial angle, or more properly, the basi-facial angle—the angle between the basion-alveolar point line and the line from alveolar point to nasion—ranges in ten of the male skulls (the only ones in which it could be determined) from 66° to 74°. The alveolar angle, or that between the basion-alveolar point line and the line from the alveolar point to the middle of the nasal notches (the inferior boundary of the nasal height), differed in the same individuals between 48° and 67°. The variation in the latter, it is seen, is perceptibly greater than in the former, showing that the inclination of the upper alveolar process in this series depends more on that of the facial parts behind and above it than on any causes inherent in itself or in the teeth.

No similar measurements are as yet available for comparison with whites;[1] but it is certain that both the facial and the alveolar average prognathism is in the Indians somewhat greater than in the whites, though less than in the American or African negro, or in the Melanesian.

Measurements of the frontal bone show that the diameter frontal minimum is not considerable. It ranges in the thirteen males from 8.7 to 10.2 cm., with the average of 9.6 cm., while in the ten females it measures from 8.6 to 10.2 cm., the average being 9.3 cm. The sex differences are not very material. It was furthermore noticed that this measurement shows but little direct relation with the breadth of the skull; *i. e.*, the breadth of the skull and the breadth-length index.

The diameter frontal maximum is of service only in the non-deformed skulls, being more or less altered in all cases in which either fronto-occipital or occipital compression is present.

The main diameter of the foramen magnum ranges from 3 to 3.5 cm. in six of the males where it could be measured, and from 3 to 3.3 cm. in three of the females.

The lower jaw shows only moderate dimensions. The bigonial diameter varies in nine males from 9.9 to 11.2 cm. and in seven females from 9.5 to 10.7 cm. The average height of the symphisis is 3.65 cm. in the males (3.2 to 3.9 cm.), and 3.45 cm. (3.1 to 3.6 cm.) in the females. The angle shows very little difference in the

[1] A large series is, however, promised by Dr. Rivet, who arrived independently at measuring the basi-facial angle in a similar manner. See "L'Anthropologie," XX, 1909, 35 *et seq.*, and 175 *et seq.*

two sexes, averaging 120° (107° to 128°) in ten males, and 122° (110° to 128°) in eight females. It is clear that the lower jaw, except for its slightly smaller dimensions, is of little use for sexual identification in this series of skulls.

Observations on the Crania.

The descriptive notes concerning the Arkansas skulls present so many similarities to those bearing on the skulls from Louisiana that the two can be treated together. They will therefore be found reported on in the section following that dealing with measurements of the Louisiana crania.

The same applies also to the long-bones and the other bones of the skeletons, which will be described together in a later section.

ADDITIONAL MEASUREMENTS OF THE ARKANSAS CRANIA WITH REFERENCE TO THE FACIAL AND OTHER PARTS OF THE SKULL

			PROGNATHISM *						FRONTAL BONE			FORAMEN MAGNUM	LOWER JAW			
Museum No.	Sex	Deformation of vault	Basion-alveolar point diameter (*a*)	Basion-nasion diameter	Angle between *a* and alveolar point-nasion line	Basion-middle of nasal notches diameter	Height from alveolar point to middle of nasal notches (*b*)	Angle between *a* and line *b*	Diameter frontal minimum (*a*)	Diameter frontal maximum (*b*)	Percental relation of *a* to *b* $\left(\frac{a \times 100}{b}\right)$	Mean diameter	Diameter bigonial	Angle right	Angle left	Height at symphisis
			cm.	cm.	degrees	cm.	cm.	degrees	cm.	cm.		cm.	cm.	degrees		cm.
255.119	Male	—	10.0	10.2	*71*	8.9	2.05	*51*	10.2	12.2	*83.6*	3.3	10.5	?	119	3.6
.126	"	—	10.7	11.0	*72*	9.7	2.25	*56*	10.0	12.1	*82.6*	?	11.2	121	120	3.9
.149	"	—	10.0	10.2	*71*	9.2	2.3	*62*	8.7	11.3	*77.0*	?	9.9	127	128	3.9
.121	"	o. c.	10.2	10.3	*71*	9.2	2.1	*55*	9.3	?	?	?	?	?		?
.123	"	o. c.	?	?	?	?	?	?	9.8	?	?	?	?	117	?	3.7
.124	"	f–o. c.	10.4	10.0	*66*	9.0	2.3	*48*	9.8	?	?	3.3	?	?		?
.125	"	o. c.	9.9	10.1	*70*	8.8	2.4	*55*	9.3	(11.8)	......	?	10.9	124	?	3.6
.127	"	f–o. c.	9.8	10.1	*72*	9.2	2.1	*67*	9.7	(12.4)	......	3.0	9.9	127	126	3.5
.128	"	f–o. c.	?	?	?	?	?	?	9.6	(12.9)	......	?	?	?		?
.141	"	o. c.	10.3	10.7	*74*	9.1	2.2	*50*	9.8	(12.9)	......	3.5	10.2	107	112	3.5
.145	"	o. c.	?	?	?	?	?	?	9.9	(12.4)	......	?	10.4	125	?	3.9
.150	"	o. c.	10.1	10.6	*73*	9.0	2.1	*53*	9.6	(11.6)	......	3.4	10.6	119	119	3.2
.152	"	f–o. c.	10.4	10.6	*71*	9.3	2.1	*53*	9.4	(12.8)	......	3.3	11.1	?	112	3.6
.120	Female	—	?	?	?	?	2.3	?	8.7	11.0	*79.1*	?	9.5	122	119	3.6
.143	"	—	?	9.5	?	?	?	?	8.6	11.0	*78.2*	3.0	9.6	127	127	3.5
.148	"	—	?	10.2	?	?	?	?	10.2	11.8	*86.4*	3.3	?	?	119	3.5
.122	"	f–o. c.	?	?	?	?	?	?	9.3	(12.2)	......	?	?	?		?
.129	"	o. c.	?	?	?	?	2.5	?	9.1	(11.9)	......	?	9.8	?	124	?
.130	"	f–o. c.	?	9.9	?	?	1.85	?	9.0	(11.6)	......	3.1	10.5	126	125	3.1
.144	"	f–o. c.	?	?	?	?	?	?	9.3	(12.0)	......	?	10.7	128	127	3.6
.146	"	f–o. c.	?	?	?	?	?	?	10.0	(11.9)	......	?	9.6	121	?	3.5
.147	"	f–o. c.	?	9.7	?	?	?	?	9.1	(11.6)	......	?	9.6	110	113	3.5
.151	"	o. c.	?	?	?	?	?	?	9.4	(12.2)	......	?	?	?		?

* Certain errors due to the employment of the sliding compass having crept into the determinations of the facial angles and sub-nasal height of the skulls from the Menard and Greer cemeteries described last year, those determinations are here repeated with corrections:

Museum No.	Angle between *a* and alveolar point-nasion line	Height from alveolar point to middle of nasal notches (*b*)	Angle between *a* and line *b*
	degrees	cm.	degrees
249.915	*74*	2.3	*60*
.921	*71*	2.2	*51*
.922	*72*	2.4	*58*
.916	*64*	2.9	*54*
.923	*73*	1.7	*52*
.924	*66*	2.45	*51*
.925	*70*	2.1	*56*

III.

LOUISIANA.

Mr. Moore's collection from Louisiana in 1909 came from several localities which are given with the list of specimens in the table below.

LOUISIANA SKULLS AND BONES

Locality	Specimen	Original No.	Museum No.	Sex	Stage of life of person*
Harrelson Landing, Caldwell Parish	Skull and bones	1	255.094	Female	Aged adult
" "	Bones	7	.099	Male	Adult
" "	"	10	.098	"	"
" "	Skull and bones	11	.095	Female	Young adult
" "	Bones	12	.096	"	Adult
" "	"	13	.097	"	"
Bell Gin Landing	Bones	—	.100	Male	"
" "	"	—	.100a	"	"
Myatt's Landing, Ouachita Parish	Skull and bones	A	.102	"	Young adult
" "	Bones	A	.102a	"	Adult
" "	Skull	9	.118	Female	Middle-age adult
" "	Bones	15	.108	"	Adult
" "	Skull and bones	19	.111	"	Young adult
" "	Skull	20	.113	"	Middle-age adult
" "	"	21	.117	"	Near adult
" "	"	22	.116	"	Young adult
" "	"	23	.115	Male	Aged adult
" "	Skull and bones	24	.106	"	Middle-age adult
" "	Bones	26	.110	"	Adult
" "	Skull and bones	27	.105	Female	Middle-age adult
" "	Bones	29	.109	Male	Adult
" "	Skull and bones	30	.104	"	Middle-age adult
" "	"	31	.103	Female	"
" "	"	32	.112	"	Aged adult
" "	"	36	.107	Male	Young adult
" "	Skull	38	.114	"	Middle-age adult
Jones Landing, Franklin Parish	Skull	—	.153	Female (negroid)	"
" "	"	—	.154	Male	"
Bray Landing, Morehouse Parish	Skull and bones	16	.201	"	"
" "	Skull	—	.202	Female	Young adult
" "	"	—	.203	Male	Aged adult
" "	"	—	.204	"	Middle-age adult
" "	Bones (a lot)	—	.205	Males and females	All adults
Mound Landing, Morehouse Parish	Skull and bones	1	.207	Female	Middle-age adult
Ward Place, Morehouse Parish	Skull and bones	1	.217	Male	Aged adult
" "	"	2	.218	"	Middle-age adult
" "	Bones	4	.227	Female	Adult
" "	"	5	.226	"	"
" "	Skull and bones	6	.219	"	Middle-age adult
" "	"	7	.211	Male	"
" "	"	8	.210	"	"
" "	"	9	.216	Female	Young adult
" "	"	10	.220	"	Middle-age adult
" "	"	12	.215	Male	"
" "	"	13	.213	Female	Young adult
" "	"	14	.209	Male	Middle-age adult
" "	Bones	15	.222	"	Adult
" "	"	16	.221	"	"
" "	"	17	.224	"	"
" "	"	18	.225	Female	"
" "	"	19	.223	Male	"
" "	"	20	.214	Female	"
" "	"	22	.212	"	"
" "	Skull	31	.208	"	Middle-age adult

* For explanation of terms used, see the similar table pertaining to Arkansas, page 175.

There are seventeen male and eighteen female skulls. Including all the bones, however, thirty male and twenty-eight female individuals are represented.

With a single exception, these specimens are in a state of preservation similar to that of the Arkansas skeletal remains. The exception noted is the bones from Harrelson Landing, which are more resistant, and darker in color.

Deformations are again frequent. Of the male skulls, six are of normal shape, nine show various grades of occipital and two of fronto-occipital compression; among the skulls of females, six are non-deformed, eight have occipital flattening and four fronto-occipital compression.

An interesting fact is that the fronto-occipital deformation occurs in only one locality, namely, Ward Place, La. Its absence in several of the other localities may be merely accidental, due to the small number of specimens from these places. But in the fairly large series from Myatt's Landing, only occipital compression is detected. Notes regarding the grades of deformation are included with the first table of measurements.

Several of the skulls show evidence of disease; details of these are given in Section VI. Syphilis was undoubtedly present, as likewise were other pathological conditions, known already from the skeletal remains of Arkansas.

Anomalies of importance, as in the crania from Arkansas, are limited in number. In male skull No. 255.106 the basilar process shows a deep lateral fissure on the left side and a similar condition in a lesser degree on the right (Fig. 4, y); the same specimen shows also a small medio-basilar or "pharyngeal" fossa. Male skull 255.154 exhibits a very pronounced occipital torus, with a marked depression above its middle for a ligamentous or tendinous insertion. Male skull 255.203 shows an epactal or "interparietal" bone, 6.7 cm. broad and 4.5 cm. high. Male skull 255.218 has a pronounced semilunar occipital crest, and a depression of good size in the median line above it. Female skull 255.094 shows a marked bilateral depression extending antero-posteriorly over three-fifths of the surface of each parietal, between the temporal ridges and the sagittal region, due to senile diminution of nourishment of these portions and their consequent absorption. In female skull 255.118 there is a large third condyle with an articular facet; and in female skull 255.103 we find on the right a paramastoid process, 0.9 cm. high and equally stout, which articulated with the atlas. On the left side of female skull 255.212 there is a large wedge-like, separate ossicle, 2.2 cm. in length by 0.5 cm. in average breadth, between the wing of the sphenoid and the glenoid portion of the temporal bone. This separate piece includes the sphenoid spine (spinous process). Female skull 255.213 shows a pronounced depression, 3.3 by 3.0 cm. in extent, above inion; it is of the same character as the depressions in crania 255.154 and 255.218, and as those of a number of skulls in the Arkansas collection of 1908, and no doubt served for a ligamentous or tendinous attachment. In female skull 255.214 there is a marked non-articular tubercle immediately back of each occipital condyle. Finally, the lower jaw of female skull 255.220 shows on each side an abnormally large and cleft-like dental foramen.

Other minor anomalies are enumerated under "Observations" (page 197).

MEASUREMENTS OF THE LOUISIANA CRANIA WITH REFERENCE TO THEIR FORM

Museum No.	Locality	Sex	Deformation	Diameter antero-posterior maximum	Diameter lateral maximum	Basion-bregma height	Cephalic index	Height-length index	Height-breadth index
				cm.	cm.	cm.			
255.094	Harrelson Landing	Female	—	17.6	14.4	? (good)	*81.8*	?	?
.095	"	"	—	17.6	14.1	14.5	*80.1*	*82.4*	*102.8*
.107	Myatt's Landing	Male	—	18.2	15.1	? (good)	*83.0*	?	?
.114	"	"	—	18.2	14.3	14.4	*78.6*	*79.1*	*100.7*
.102	"	"	Moderate occipital compression	(17.2)	(14.0)	?	....	....	....
.104	"	"	Slight occ. comp.	(16.5)	(14.8)	(14.1)	(brachycephal)	....	....
.106	"	"	Pronounced occ. comp.	(16.0)	(15.5)	(14.6)	....	....	....
.111	"	"	Slight occ. comp.	(16.6)	(14.3)	?	(brachycephal)	....	....
.115	"	"	Moderate occ. comp.	(16.9)	(14.7)	(14.3)	....	....	....
.113	"	Female	—	16.6	14.7	14.1	*88.5*	*84.9*	*95.9*
.116	"	"	—	16.6	13.8	13.6	*83.1*	*81.9*	*98.5*
.103	"	"	Moderate occ. comp.	(16.0)	(14.3)	(13.5)	....	....	....
.105	"	"	Slight occ. comp.	(17.6)	(14.5)	(13.8)	(brachycephal)	....	....
.112	"	"	Slight occ. comp.	(16.8)	(14.6)	(14.3)	"	....	....
.117	"	"	Slight occ. comp.	(16.3)	(14.9)	(14.1)	"	....	....
.118	"	"	Moderate occ. comp.	(16.6)	(14.2)	(14.6)	(meso- or slightly brachycephal)	....	....
.154	Jones Landing	Male	—	18.3	14.2	15.3	*77.6*	*83.6*	*107.7*
.203	Bray Landing	Male	—	17.6	14.3	14.8	*81.2*	*84.1*	*103.5*
.204	"	"	—	17.3	15.1	15.0	*87.3*	*86.7*	*99.3*
.201	"	"	Slight occ. comp.	(17.7)	(15.2)	(14.5)	(brachycephal)	....	....
.202	"	Female	Moderate occ. comp.	(16.5)	(15.0)	(14.0)	(brachycephal)	....	....
.207	Mound Landing	Female	—	16.2	14.5	14.3	*89.5*	*88.3*	*98.6*
.211	Ward Place	Male	—	18.1	14.5	14.5	*80.1*	*80.1*	*100.0*
.209	"	"	Moderate occ. comp.	(16.8)	(15.5)	?	(brachycephal)	....	....
.210	"	"	Moderate fronto-occ. comp.	(16.5)	(14.7)	?	....	....	....
.215	"	"	Lateral mod. fronto-occ. comp.	(17.7)	(15.1)	(14.2)	(probably brachycephal)	....	....
.217	"	"	Moderate occ. comp.	(17.1)	(14.6)	(14.8)	....	....	....
.218	"	"	Moderate occ. comp.	(16.3)	(15.1)	?	....	....	....
.213	"	Female	—	16.6	13.6	13.6	*81.9*	*81.9*	*100.0*
.208	"	"	Slight fronto-occ. comp.	(16.5)	(13.9)	(12.5)	....	....	....
.212	"	"	Pronounced occ. comp.	(15.7)	(14.6)	(13.6)	....	....	
.214	"	"	Slight frontal with pronounced occ. comp.	(15.5)	(14.9)	(13.7)	....	....	....
.216	"	"	Slight frontal with pronounced occ. comp.	(16.6)	(14.9)	(13.4)	....	....	....
.219	"	"	Slight frontal with moderate occ. comp.	(16.1)	(14.5)	(13.2)	....	....	....
.220	"	"	Medium occ. comp.	(15.5)	(14.5)	(14.0)	....	....	....

The Form of the Louisiana Skulls.—In form the Louisiana crania show a predominance of the same brachycephalic type as that of the majority of skulls from Arkansas; but there are likewise some more oblong heads, which are similar in their turn to those of like form from Arkansas. The longer forms appear among the non-deformed Louisiana skulls, and are suspected also in several of the deformed crania. Besides these two types there are undoubtedly also intermediate forms resulting from admixture.

The height of the skulls for the greater part is quite considerable, as is the case with the skulls from Arkansas.

The principal measurements with reference to the form of the crania are given on p. 185.

Two features shown by the preceding table, which deserve special notice are the height-length and height-breadth indices. The former index averages 82.7 in the males, and 84.3 in the females; the latter 102.2 in the males, and 99.1 in the females. All of these averages, but particularly those of the height-length index, are extraordinarily high and are met with even among the Indians only in certain restricted areas.

The Size of the Louisiana Skulls.—In size there is again a fair agreement between the crania from Louisiana and those from Arkansas. A number of the male skulls and one female specimen show, as seen from the following table, very fair capacity (between 1500 and 1600 c.c.); but there are also crania, both male and female, of but very moderate capacity. In the case of female skull 255.208 the capacity is decidedly small, though such examples are not uncommon in the American race. The average capacity of the twelve male crania is *1460* (1350–1580) c.c.; that of the 7 female skulls, *1310* (1130–1390) c.c. In comparison with this, all the available Arkansas crania the capacity of which could be determined, comprising 19 males and 14 females, give an average of *1455* (1260–1670) c.c. for the males and *1255* (1140–1395) c.c. for the females. The differences between the two areas are not very material, but, so far as they obtain, they favor Louisiana. They are noticeably more pronounced in the females than in the males. This interesting condition may be incidental to the small number of specimens, particularly in the series from Louisiana; yet it deserves attention. Similar differences are noted in all the measurements bearing on the size of the vault in the two series of skulls.

The percental relation between the capacity of the female and that of the male crania, the latter being taken as 100, amounts in Louisiana to 89.7, in Arkansas to 86.3. This shows that the female skulls in these groups are not only absolutely larger in Louisiana than in Arkansas, but that they are also relatively larger, when compared with the males, than they are in the other State. This rather strengthens the possibility that the high average capacity of the Louisiana female skulls is accidental.

The percentage of difference between the capacity of the male and female crania is higher than that shown by any other of the principal external measurements of the vault. This will be shown more clearly in the succeeding pages.

MEASUREMENTS OF THE LOUISIANA CRANIA WITH REFERENCE TO THEIR SIZE

Museum No.	Locality	Sex	Deformity*	Capacity	Cranial module (= mean diameter)	Circumference maximum (above supra-orbital ridges)	Nasion-opisthion arc	Thickness of left parietal (above squamous suture)
				c. c.	cm.	cm.	cm.	mm.
255.094	Harrelson Landing	Female	——	?	?	50.8	36.9	4–5
.095	"	"	——	1370	15.40	50.0	37.0	4–7
.107	Myatt's Landing	Male	——	?	?	51.7	36.4	4–7
.114	"	"	——	1545	15.63	51.7	36.0	4–6
.102	"	"	o. c.	?	?	?	?	4–6
.104	"	"	"	?	15.13	49.3	33.6	5–7
.106	"	"	"	1420	15.37	49.7	34.3	4–7
.111	"	"	"	1390	15.23	48.5	34.8	5–7
.115	"	"	"	1350	15.30	49.3	34.7	5–7
.113	"	Female	——	?	15.13	49.7	36.0	4–5
.116	"	"	——	?	14.67	48.7	35.0	3–6
.103	"	"	o. c.	?	14.60	48.0	33.2	3–5
.105	"	"	"	1410	15.30	52.2	36.2	5–7
.112	"	"	"	1390	15.23	50.3	35.0	5–7
.117	"	"	"	?	15.10	49.3	33.8	3–5
.118	"	"	"	?	15.13	49.3	36.8	4–7
.154	Jones Landing	Male	——	1560	15.93	51.6	38.5	5–7
.203	Bray Landing	Male	——	?	15.57	50.1	?	4–5
.204	"	"	——	1580	15.80	51.2	35.9	5–6
.201	"	"	o. c.	1570	15.80	52.3	37.2	5–6
.202	"	Female	"	?	15.17	50.0	35.7	4–5
.207	Mound Landing	Female	——	?	15.00	47.9	33.3	4–6
.211	Ward Place	Male	——	1470	15.70	51.0	35.6	4–7
.209	"	"	o. c.	?	?	50.9	34.2	4–6
.210	"	"	f-o.c.	1420	?	48.8	?	4–5
.215	"	"	"	1400	15.67	51.2	36.0	5–8
.217	"	"	o. c.	1440	15.50	49.5	34.4	4–7
.218	"	"	"	1350	?	49.6	?	5–6
.213	"	Female	——	1215	14.60	47.2	34.3	5–7
.208	"	"	f-o.c.	1130	14.30	47.0	33.4	4–5
.212	"	"	o. c.	1330	14.63	47.3	33.3	4–6
.214	"	"	f-o.c.	1390	14.70	47.6	33.3	4–5
.216	"	"	"	1325	14.97	48.0	33.5	4–6
.219	"	"	"	?	14.60	47.1	?	4–6
.220	"	"	o. c.	?	14.67	47.7	?	3–4

* O. c. = occipital compression; f-o. c. = fronto-occipital compression.

The relation of the capacity to stature, the latter represented by the length of the femur, was determinable in 7 of the male and 5 of the female skulls from Louisiana, and the results are given in the following table. The relation, it is seen, is not without its variations, but it should prove of considerable interest when established in large series of skeletons.

The number of Indian specimens available is not satisfactory for a comparison of the capacity-stature relation with that in whites; nevertheless, by including the data on the Arkansas skulls given in the previous section and accepting *33.3* as the approximate average femoro-cranial index in white males, it is found that of twelve male Indian skulls only three show an index greater than that of whites of the same sex, while in nine it is lesser. In all probability a lesser femoro-cranial index than that of whites exists throughout among the Indians, though there will be individual exceptions. This means that the well known lower average cranial capacity of the Indian is not due to smaller stature.

The cranial module (mean diameter) and the measurements of circumference

Relation of Skull Capacity to Stature

Skull No.	Cranial Capacity	Bicondylar length of right femur	Femoro-cranial index (= c. c. of skull capacity per 1.0 cm. of femoral length)
Males	c. c.	cm.	
255.218	1350	45.0 (left)	30.1
.111	1390	44.7	31.1
.210	1420	43.1	32.9
.106	1420	43.0 (left)	33.0
.217	1440	44.7	32.2
.211	1470	44.6	33.0
.201	1570	45.5	34.5
Females			
255.213	1215	42.0	28.9
.216	1325	40.6	32.6
.212	1330	43.1	30.9
.214	1390	41.4	33.6
.112	1390	41.2	33.7

maximum and of the nasion-opisthion arc are given next to show their relative value in comparison with the capacity. Reference to the tabulated data shows that the measurements most closely expressing or representing the size of the skull, after capacity, are the cranial module and the circumference, the nasion-opisthion arc offering greater variability. The necessity of measuring the thickness of the cranial vault in each case where the actual capacity can not be determined is apparent. This measurement, as taken in this series, *i. e.*, along a line 1.0 cm. above the temporo-parietal suture, is not perfect, but it has the advantage that it can be taken with the compass used for other skull measurements. It would be preferable to determine the thickness of the parietal along a line running from before backward nearer or at its middle, but this would require a special instrument.

Results of considerable interest are obtained by comparing the averages of the principal external measurements of the skull which relate to its size, in all the available collections from Arkansas and Louisiana, and by contrasting them in the two sexes. According to these averages, which also are given in the next table, the Louisiana crania, of both males and females, show the largest external dimensions, while those from the Menard and Greer cemeteries in Arkansas show the smallest. This result agrees in the main with the determinations relating to the internal size of the skulls. The differences, however, on the whole are very moderate, and it is quite probable that in at least some of the groups they are accidental, due to the small number of specimens.

The average thickness of the skulls is in every series except that from Boytt's Field, Arkansas, noticeably smaller in the females than in the males. The male crania from the Menard and Greer cemeteries show the highest average thickness, but they are represented by only three specimens; the female skulls from that locality are not exceptional. The next in thickness are the male skulls from Louis-

COMPARISON OF THE AVERAGES OF PRINCIPAL CRANIAL MEASUREMENTS RELATING TO THE SIZE OF THE SKULL, EXCLUSIVE OF CAPACITY.

Locality	Males						Females						Males		Females	
	Number of specimens	Average cranial module (mean diameter)	Number of specimens	Average circumference (maximum, above supraorbital ridges)	Number of specimens	Average nasion-opisthion arc	Number of specimens	Average cranial module	Number of specimens	Average circumference (maximum, above supraorbital ridges)	Number of specimens	Average nasion-opisthion arc	Number of specimens	Average thickness of parietal 1 cm. above temporo-parietal suture	Number of specimens	Average thickness of parietal 1 cm. above temporo-parietal suture
		cm.		cm.		cm.		cm.		cm.		cm.		mm.		mm.
Arkansas: Menard and Greer cemeteries, Jefferson and Mississippi counties	3	*15.47* (15.28–15.83)	3	*50.8* (49.9–51.8)	3	*34.5* (33.8–35.2)	7	*14.82* (14.40–15.07)	7	*48.0* (46.3–49.1)	7	*33.2* (32.3–33.9)	3	*6.0* (4–6 to 6–7)	7	*5.0* (3–4 to 6–7)
Arkansas: Boytt's Field, Union county	10	*15.36* (14.87–15.83)	13	*50.0* (48.0–52.7)	10	*35.2* (34.1–37.3)	6	*14.84* (14.67–15.13)	10	*48.5* (47.5–49.6)	7	*34.2* (32.7–35.2)	13	*5.0* (4–6 to 5–7)	9	*5.3* (4–6 to 5–7)
Arkansas: Earlier National Museum material from Drew and Mississippi counties	16	*15.54* (15.10–16.07)	21	*50.2* (48.3–53.0)	21	*35.6* (32.6–37.9)	11	*14.81* (14.53–15.20)	11	*48.1* (47.3–49.9)	9	*34.1* (31.7–35.4)	22	*5.0* (3–4 to 5–8)	13	*4.5* (3–4 to 5–8)
Louisiana	12	*15.55* (15.13–15.93)	16	*50.4* (48.5–52.3)	13	*35.5* (33.6–38.5)	17	*14.90* (14.30–15.40)	18	*48.8* (47.0–52.2)	16	*34.8* (33.2–37.0)	17	*5.5* (4–5 to 5–8)	18	*4.85* (3–4 to 5–7)

RELATION OF AVERAGES IN FEMALE AND MALE SKULLS (MALE SKULLS = 100).

Locality	Cranial module	Circumference	Nasion-opisthion arc	Locality	Cranial module	Circumference	Nasion-opisthion arc
Arkansas: Menard and Greer cemeteries, Jefferson and Mississippi counties	96	94.5	96	Arkansas: Earlier National Museum material from Drew and Mississippi counties.	95.5	96	96
Arkansas: Boytt's Field, Union county	96	97	97	Louisiana	96	97	98

MEASUREMENTS OF THE LOUISIANA CRANIA WITH REFERENCE TO THE FACIAL PARTS

Museum No.	Locality	Sex	Deformity of vault	Total height of face	Alveolar point-nasion height	Diameter bizygomatic maximum	Facial index, total	Facial index, upper	Nose, height (mean from nasion to the nasal notches)	Nose, breadth maximum	Nose, index	Orbits, height		Orbits, breadth		Orbits, index		Palate, external length	Palate, external breadth	Palate, index
												right	left	right	left	right	left			
				cm.	cm.	cm.			cm.	cm.		cm.	cm.	cm.	cm.			cm.	cm.	
255.094	Harrelson Landing	Female	—	?	?	12.8	?	?	?	?	?	?	?	?	?	?	?	?	?	?
.095	"	"	—	11.3	6.8	13.4	84.3	50.7	4.85	2.3	47.4	3.6	3.5	3.9	3.8	92.3	92.1	5.4	6.0	111.1
.107	Myatt's Landing	Male	—	?	7.4	?	?	?	5.2	2.35	45.4	?	?	?	?	?	?	5.7	6.4	112.3
.114	"	"	—	12.8	7.9	14.3	89.5	55.2	5.4	2.6	48.1	3.7	3.6	4.05	4.1	91.4	87.8	5.8	6.6	113.8
.102	"	"	o. c.	?	?	?	?	?	?	2.3	?	?	?	?	?	?	?	?	?	?
.104	"	"	o. c.	11.5	7.1	13.7	83.9	51.8	5.1	2.7	52.9	3.6	3.6	3.6	3.6	100.0	100.0	5.5	6.2	112.7
.106	"	"	o. c.	?	?	14.1	?	?	?	?	?	3.5	?	3.9	?	89.7	?	?	?	?
.111	"	"	o. c.	?	?	?	?	?	4.5	2.6	57.8	?	?	?	?	?	?	?	?	?
.115	"	"	o. c.	?	7.9	14.5	?	54.5	5.2	2.5	48.1	3.85	3.85	4.15	4.05	92.8	95.1	5.7	6.8	119.3
.113	"	Female	—	11.2	7.2	?	?	?	5.2	?	?	?	?	?	?	?	?	?	?	?
.116	"	"	—	12.2	7.3	?	?	?	5.3	?	?	?	?	?	?	?	?	5.6	6.5	116.1
.103	"	"	o. c.	?	7.0	?	?	?	5.15	2.6	50.5	?	?	?	?	?	?	?	?	?
.105	"	"	o. c.	?	?	13.1	?	?	4.85	2.5	51.5	3.4	3.4	3.75	3.8	90.7	89.5	?	?	?
.112	"	"	o. c.	?	?	13.4	?	?	4.8	2.7	56.2	3.3	3.4	3.9	3.8	84.6	89.5	?	?	?
.117	"	"	o. c.	11.7	6.9	?	?	?	4.95	2.45	49.5	?	?	?	?	?	?	5.4	6.8	125.9
.118	"	"	o. c.	?	?	?	?	?	4.9	2.6	53.1	3.45	3.55	4.0	4.0	86.2	88.7	?	?	?
.154	Jones Landing	Male	—	?	?	?	?	?	?	2.6	?	?	?	?	?	?	?	5.7	6.7	117.5
.203	Bray Landing	Male	—	?	?	?	?	?	5.1	2.5	49.0	?	?	?	?	?	?	?	?	?
.204	"	"	—	13.4	8.0	?	?	?	5.4	2.65	49.1	?	?	?	?	?	?	6.0	7.3	121.7
.201	"	"	o. c.	11.9	7.0	14.6	81.5	47.9	4.95	2.7	54.5	?	?	?	?	?	?	5.4	6.6	122.2
.202	"	Female	o. c.	11.0	6.6	13.6	80.9	48.5	4.75	2.35	49.5	3.3	3.4	3.8	3.7	86.8	91.9	5.6	6.6	117.9
.207	Mound Landing	Female	—	11.3	6.8	?	?	?	5.0	2.5	50.0	?	?	?	?	?	?	5.5	6.7	121.8
.211	Ward Place	Male	—	12.7	8.0	14.6	87.0	54.8	5.5	2.75	50.0	3.4	3.5	4.4	4.2	77.3	83.3	6.1	6.8	111.5
.209	"	"	o. c.	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
.210	"	"	f–o. c.	12.1	7.4	13.4	90.3	55.2	5.05	2.4	47.5	3.65	3.75	4.0	3.9	91.2	96.1	5.5	6.5	118.2
.215	"	"	f–o. c.	12.0	7.4	14.4	83.3	51.4	4.9	2.6	53.1	3.4	3.4	3.9	3.8	87.2	89.5	6.0	6.5	108.3
.217	"	"	o. c.	?	?	?	?	?	5.45	2.75	50.4	3.75	3.7	4.2	4.0	89.3	92.5	?	?	?
.218	"	"	o. c.	?	7.5	14.6	?	51.4	5.3	3.0	56.6	3.6	3.55	4.0	4.1	90.0	86.6	?	?	?
.213	"	Female	—	11.7	7.1	13.0	90.0	54.6	4.9	2.3	46.9	3.35	3.4	3.65	3.55	91.8	95.8	5.4	6.1	113.0
.208	"	"	f–o. c.	?	6.6	12.8	?	51.6	4.8	2.7	56.2	3.4	?	3.75	?	90.7	?	?	?	?
.212	"	"	o. c.	10.6	6.6	13.3	79.7	49.6	4.85	2.7	55.7	3.3	3.35	3.85	3.85	85.7	87.0	4.9	6.2	126.5
.214	"	"	f–o. c.	?	6.9	13.6	?	50.7	4.9	2.35	48.0	3.65	3.65	3.8	3.75	93.4	97.3	5.1	6.5	127.4
.216	"	"	f–o. c.	11.2	7.2	13.4	83.6	53.7	4.95	2.7	54.5	3.5	3.5	3.7	3.75	94.6	93.3	5.6	6.8	121.4
.219	"	"	f–o. c.	?	6.5	13.5	?	48.1	4.75	2.85	60.0	?	?	?	?	?	?	?	?	?
.220	"	"	o. c.	?	?	13.4	?	?	4.65	2.85	61.3	3.45	3.45	3.95	3.8	87.4	90.8	?	?	?

iana; this has a bearing on their relatively large external size, as compared with the other groups of crania, with only a slightly larger capacity.

The percental relation of female to male averages of the principal external measurements of the vault presents considerable likeness in the four localities, and is much alike in the separate measurements. Larger numbers of specimens would doubtless reduce further some of the irregularities. As already alluded to, these sexual indices exceed considerably the similar indices of cranial capacity. This is due partly to the relatively great thickness of the female skulls and partly to other conditions. It will be of importance to determine these relations with respect to other groups of American aborigines as well as to other races.

THE FACIAL PARTS.

Facial Dimensions.—In the majority of the Louisiana crania the facial parts unfortunately are injured, yet enough remains to show that in this series the face is somewhat higher and broader than is the case with the skulls from Boytt's Field, Arkansas: it more nearly approaches the specimens from the Menard and Greer cemeteries. The relative proportions of the face, *i. e.*, the facial indices, show much similarity in all these groups, as is evident from the table on page 190. Nevertheless, the facial indices, especially the upper, are perceptibly lower in the crania from Boytt's Field than in the others, and in addition the averages of all the facial measurements of the skulls from this locality are lower than those of the other series. This relative smallness of the face of the former inhabitants of the Boytt's Field region was probably a local peculiarity.

Comparison of Facial Dimensions of Male Skulls from Louisiana and Arkansas

Locality	Number of Cases	Average total facial height	Number of Cases	Average upper facial height	Number of Cases	Average diameter bizygomatic maximum	Number of Cases	Average total facial index	Number of Cases	Average upper facial index
		cm.		cm.		cm.				
Louisiana (*a*)	7	*12.35* (11.5–13.4)	10	*7.55* (7.0–8.0)	9	*14.2* (13.4–14.6)	6	*86* (81.5–90.3)	8	*53* (51.4–55.2)
Arkansas (*b*): Menard and Greer cemeteries	1	12.4	1	7.7	2	*14.55* (14.5–14.6)	1	*85*	1	*53*
Arkansas (*c*): Boytt's Field	9	*11.75* (11.3–12.2)	11	*7.05* (6.8–7.3)	8	*13.85* (13.3–14.3)	7	*85* (81.5–90.3)	8	*51* (47.9–55.2)
Arkansas (*d*): Drew and Mississippi counties	3	*12.5* (12.1–13.1)	11	*7.6* (7.0–8.2)	10	*13.95* (13.5–14.6)	2	*86* (84.2–88.3)	7	*54.5* (52.1–60.7)

(*a*) The average height of the upper face in 13 female skulls from Louisiana is 6.88 cm.; in 5 from Arkansas (*b*), 7.35 cm.; in 5 from Arkansas (*c*), 6.93 cm.; and in 5 from Arkansas (*d*), 7.06 cm.

The average proportions and the index of the *nose* in the several groups of skulls from Louisiana and Arkansas bear close resemblance; nevertheless it will be noticed from the following table that there are certain local differences. These are due particularly to the unequal average height of the nose, which in turn is owing largely to differences in the height of the upper face. Thus the greatest average

height of the nose occurs in crania from the Menard and Greer group and in the male skulls from Drew and Mississippi counties, Arkansas, and these two series show also the lowest average nasal index. On the other hand, the lowest nose with the highest nasal index is found in the Boytt's Field crania, in which the face, as has been previously mentioned, also was exceptionally low. The average breadth of the nose differs less than the height in the various groups of skulls under consideration.

As to sexual differences, the three larger groups of crania show, as is usual in Indians, a lower average nasal index in the males than in the females. Similar difference exists also in whites and in other races, and is due to the fact that the height of the upper face is relatively less in the females, as compared with males, than its breadth.

COMPARISON OF NASAL DIMENSIONS

Sex and Locality	Number of individuals	Nose: average height	Nose: average breadth	Nasal index: average
Males		cm.	cm.	
Louisiana	13	5.16 (4.5–5.5)	2.62 (2.3–3.0)	50.95 (45.4–57.8)
Arkansas: Boytt's Field	11	4.98 (4.7–5.35)	2.54 (2.35–2.8)	51.05 (46.7–53.8)
Arkansas: Menard and Greer cemeteries	2	5.22	2.62	50.25 ....
Arkansas: Drew and Mississippi counties	13	5.49 (5.05–5.80)	2.69 (2.45–2.95)	49.40 (45.6–54.5)
Females				
Louisiana	15	4.87 (4.65–5.3)	2.56 (2.3–2.85)	52.65 (46.9–61.3)
Arkansas: Boytt's Field	4	4.70 (4.4–4.9)	2.57 (2.5–2.7)	54.80 (52.1–60.0)
Arkansas: Menard and Greer cemeteries	5	5.15 (4.9–5.3)	2.50 (2.4–2.6)	48.55 (45.3–51.0)
Arkansas: Drew and Mississippi counties	7	4.96 (4.7–5.2)	2.61 (2.45–2.70)	52.70 (49.0–57.4)

The *orbital* height in the Louisiana skulls ranges from 3.4 to 3.85 cm., and the breadth from 3.6 to 4.4 cm. In the females the variations are: height 3.3 to 3.65 cm., breadth 3.55 to 4.0 cm. The index varies from 77.3 to 100.0 in the male skulls, and from 84.6 to 97.3 in the female crania. The majority of the specimens are megaseme; but the value of the orbital dimensions and indices in many of the artificially deformed skulls is problematic. It is certain that in some cases of fronto-occipital compression the deformation has the effect of heightening and possibly also of narrowing the orbits. The simple occipital compression is less influential; nevertheless, when of a higher degree, it is not without an effect on the orbital measurements.

In some cases both the measurements and the indices of the two orbits differ quite appreciably, and in a majority of these instances the index of the left orbit is the larger. Thus, of the eighteen crania in which the index could be determined, it was equal in two, larger on the right side in four, and larger on the left side in twelve. Similar differences were noted in the measurements of the Arkansas series; they exist also among Indians elsewhere, and have been found in whites.

The *palate* in the Louisiana skulls is in the males predominantly mesuranic, in the females mainly brachyuranic. Its average indices are brachyuranic, and

show, as do the average measurements, considerable likeness to those of the three other series of skulls available for comparison. The higher indices in the female than in the male crania of the Louisiana group are apparently exceptional. The locality differences, shown in the following table, are so irregular that no definite significance can be attached to them.

PALATE: COMPARISON OF AVERAGE MEASUREMENTS AND INDICES

Sex and Locality	Number of specimens	External length of the palate (Turner), averages	Greatest external breadth of the palate, averages	Palatal index, averages
Males		cm.	cm.	
Louisiana	10	*5.75* (5.4-6.1)	*6.65* (6.2-7.3)	*116* (108.3-122.2)
Arkansas: Boytt's Field	12	*5.57* (5.3-6.0)	*6.56* (6.1-7.1)	*118* (108.6-126.8)
Arkansas: Menard and Greer cemeteries	1	5.80	6.90	119 ....
Arkansas: Drew and Mississippi counties	7	*5.75* (5.6-5.8)	*7.02* (6.55-7.40)	[illegible] (113.0-128.6)
Females				
Louisiana	9	*5.35* (4.9-5.6)	*6.50* (6.0-6.8)	*122* (111.1-127.4)
Arkansas: Boytt's Field	2	*5.65*	*6.45*	*115* ....
Arkansas: Menard and Greer cemeteries	5	*5.71* (5.35-6.2)	*6.80* (6.55-7.1)	*119* (114.5-127.1)
Arkansas: Drew and Mississippi counties	5	*5.44* (5.1-5.7)	*6.37* (5.95-6.75)	*117* (104.4-133.9)

Additional Measurements of the Facial and Other Parts of the Skull.

The individual data are here given, as in the case of the Arkansas crania, in a separate table, in order to facilitate their possible use according to secondary localities or other standards. Thus presented they will also render easier the study of the effects of deformation on some of the measurements, particularly the diameter frontal maximum (see page 194).

Prognathism.—For the Louisiana series of skulls the measurements pertaining to facial and alveolar prognathism give an average basi-facial angle in each sex of 70°, with an average alveolar angle of 55.5° in the males and 52° in the females. The alveolar process in the females is somewhat more slanting, but it either does not increase or it increases but little the total facial protrusion. As will be seen in the next table the measurements and angles relative to this feature show a close similarity to those obtained on the Arkansas series, particularly the skulls from Boytt's Field. The basi-facial angle presents remarkably small variation, both within the individual series and in the separate groups.

The Frontal Bone.—As in some of the Arkansas specimens, the smallest frontal breadth is decidedly low in some of the Louisiana skulls, and it never exceeds moderate dimensions.

The averages given below show, as usual, a perceptibly larger diameter frontal minimum in the males than in the females; and there is a close similarity in the measurement of the Louisiana series and the crania from Boytt's Field, Arkansas.

ADDITIONAL MEASUREMENTS OF THE LOUISIANA CRANIA PERTAINING TO THE FACIAL AND OTHER PARTS OF THE SKULL

Museum No.	Locality	Sex	Deformation of vault	PROGNATHISM: Basion-alveolar point diameter (a)	PROGNATHISM: Basion-nasion diameter	PROGNATHISM: Angle between a and alveolar point-nasion line	PROGNATHISM: Basion-middle of nasal notches diameter	PROGNATHISM: Height from alveolar point to middle of nasal notches (b)	PROGNATHISM: Angle between a and line b	FRONTAL BONE: Diameter frontal minimum (a)	FRONTAL BONE: Diameter frontal maximum (b)	FRONTAL BONE: Percental relation of a to b	FORAMEN MAGNUM: Mean diameter	LOWER JAW: Diameter bigonial	LOWER JAW: Angle right	LOWER JAW: Angle left	LOWER JAW: Height at symphysis
				cm.	cm.	degrees	cm.	cm.	degrees	cm.	cm.		cm.	cm.	degrees		cm.
255.094	Harrelson Landing	Female	—	?	?	?	?	?	?	9.9	12.0	82.5	?	10.7	134	?	?
.095	"	"	—	10.2	10.7	75	8.9	2.25	50	9.5	11.1	85.6	3.15	10.2	?	?	3.5
.107	Myatt's Landing	Male	—	?	?	?	?	?	?	9.2	12.3	74.8	?	?	?	?	?
.114	"	"	—	11.0	11.1	69	9.8	2.6	56	10.0	12.2	82.0	3.5	11.3	118	?	4.0
.102	"	"	o. c.	?	?	?	?	?	?	9.3	?	......	?	?	112	?	?
.104	"	"	o. c.	10.1	10.6	73	9.3	2.1	61	8.5	(11.7)	......	3.3	9.5	124	129	3.7
.106	"	"	o. c.	?	10.2	?	?	?	?	9.3	(12.7)	......	3.35	?	120	?	3.5
.111	"	"	o. c.	?	?	?	?	?	?	9.8	(12.3)	......	?	11.0	131	?	?
.115	"	"	o. c.	10.2	10.5	70	9.1	2.75	58	9.8	(11.9)	......	3.5	?	?	?	?
.113	"	Female	—	?	9.9	?	?	?	?	9.8	12.4	79.0	3.05	9.9	127	?	3.3
.116	"	"	—	?	9.7	?	?	?	?	9.0	12.0	75.0	3.35	10.3	120	118	3.2
.103	"	"	o. c.	?	10.2	?	?	?	?	?	(11.4)	......	3.0	11.3	?	122	3.3
.105	"	"	o. c.	?	9.9	?	8.2	?	?	9.8	(12.7)	......	3.15	9.5	120	117	3.4
.112	"	"	o. c.	?	10.0	?	9.0	?	?	9.8	(12.5)	......	3.4	?	122	?	?
.117	"	"	o. c.	?	9.9	?	?	?	?	9.4	(12.2)	......	3.5	10.2	118	122	3.6
.118	"	"	o. c.	?	10.2	?	9.1	?	?	9.8	(12.2)	......	?	?	?	?	?
.154	Jones Landing	Male	—	?	11.0	?	?	?	?	9.7	11.9	81.5	3.3	10.4	117	116	3.7
.203	Bray Landing	Male	—	?	10.4	?	?	?	?	9.2	11.7	78.6	?	?	?	?	3.4
.204	"	"	—	10.5	10.5	68	9.1	2.7	52	10.2	12.8	79.7	3.4	10.7	115	112	4.4
.201	"	"	o. c.	10.0	10.4	73	9.0	2.15	57	10.2	(12.7)	......	3.3	11.4	112	113	3.8
.202	"	Female	o. c.	9.5	9.5	69	8.3	2.1	49	9.8	(12.4)	......	3.15	9.5	109	112	3.35
.207	Mound Landing	Female	—	?	10.7	?	?	?	?	9.2	11.7	78.6	3.05	9.5	121	?	3.25
.211	Ward Place	Male	—	10.8	10.8	68	9.7	2.55	57	9.8	11.8	83.0	3.45	9.9	112	112	3.8
.209	"	"	o. c.	?	?	?	?	?	?	9.5	(12.5)	......	?	10.6	109	113	3.6
.210	"	"	f-o. c.	?	?	?	?	?	?	9.7	(11.8)	......	?	10.4	118	120	3.8
.215	"	"	f-o. c.	10.6	10.4	68	9.0	2.7	48	9.6	(12.4)	......	3.6	11.6	123	126	3.4
.217	"	"	o. c.	?	10.5	?	8.7	?	?	9.8	(12.0)	......	3.7	11.0	118	?	?
.218	"	"	o. c.	?	?	?	?	?	?	9.8	(12.1)	......	?	?	?	?	?
.213	"	Female	—	9.7	9.7	69	8.5	2.3	53	8.3	11.3	73.5	3.15	?	121	?	3.7
.208	"	"	f-o. c.	?	9.2	?	?	?	?	9.1	(10.8)	......	3.05	?	?	?	?
.212	"	"	o. c.	9.3	9.5	71	8.3	1.85	52	9.2	(11.9)	......	3.15	9.1	125	125	3.3
.214	"	"	f-o. c.	9.4	9.7	71	8.4	2.15	57	9.2	(12.2)	......	3.15	?	?	?	?
.216	"	"	f-o. c.	10.1	9.8	66	8.9	2.35	52	9.1	(11.6)	......	3.25	9.9	117	115	3.4
.219	"	"	f-o. c.	?	9.7	?	?	?	?	9.5	(11.7)	......	?	10.5	124	125	?
.220	"	"	o. c.	?	9.6	?	8.5	?	?	9.5	(12.4)	......	?	9.4	116	113	3.4

Comparison of Average Measurements and Indices Relating to Prognathism

Sex and Locality	Number of specimens	Average basion-alveolar point diameter	Average basion-nasion diameter	Average basion-middle of nasal notches diameter	Average height from alveolar point to middle of nasal notches	Average basi-facial angle (between basion-alveolar point-nasion lines)	Average alveolar angle (between basion-alveolar point-nasal notches lines)
Males.		cm.	cm.	cm.	cm.	degrees	degrees
Louisiana	7	*10.5* (10.0–11.0)	*10.6* (10.4–11.1)	*9.5* (9.0–9.8)	*2.5* (2.1–2.75)	*70* (68–73)	*55.5* (48–61)
Arkansas: Boytt's Field	10	*10.2* (9.8–10.7)	*10.4* (10.0–11.0)	*9.1* (8.8–9.7)	*2.2* (2.05–2.4)	*71* (66–74)	*55* (48–67)
Arkansas: Menard and Greer cemeteries	1	10.7	11.4	9.8	2.3	74	60 ....
Arkansas: Drew and Mississippi counties	5	*9.95* (9.5–10.5)	*10.35* (10.0–10.7)	*8.9* (8.5–9.5)	*2.3* (2.0–2.5)	*71* (67–73)	*57* (56–58)
Females.							
Louisiana	6	*9.7* (9.3–10.2)	*9.8* (9.5–10.7)	*8.5* (8.3–8.9)	*2.2* (1.95–2.4)	*70* (66–75)	*52* (49–57)
Arkansas: Boytt's Field	4	?	*9.8* (9.5–10.2)	?	?	?	?
Arkansas: Menard and Greer cemeteries	4	*10.1* (9.4–10.6)	*10.06* (9.9–10.2)	*9.0* (8.5–9.3)	*2.3* (1.7–2.9)	*68* (64–73)	*53* (51–56)
Arkansas: Drew and Mississippi counties	3	*9.6* (9.4–10.0)	*9.7* (9.5–9.8)	*8.4* (8.3–8.6)	*2.0* (1.85–2.15)	*69* (66–71)	*51* (49–53)*

* Two specimens.

This similarity extends, in all probability, to the Arkansas skulls collected in 1908, though the small number of specimens in the latter collection give somewhat unequal averages.

The diameter frontal maximum, which can be considered in only the undeformed specimens, averages perceptibly less in the female crania from both Louisiana and Arkansas than it does in the male skulls, but this is due merely to the smaller size of the female head. The average percental relation between the smallest and greatest frontal diameters is alike in the two sexes, though there appears a slight tendency toward a lower index in the female crania. The proportion between the two measurements is also very similar in the different localities.

Foramen Magnum.—In all the groups of skulls here considered the mean diameter of the foramen magnum shows a higher average in the males than in the females; and in both sexes it is slightly higher in the Louisiana crania than in either of the groups from Arkansas. So far as the sexes are concerned, these differences are due probably to the difference in stature, for this factor has a decided effect on the size of the foramen.

Lower Jaw.—In this series of skulls again, as in that from Arkansas, the lower jaw is of moderate dimensions throughout; yet the averages indicate that it is slightly higher than the lower jaws from Arkansas.

Both the breadth and the height of the lower jaw are, as may be expected, perceptibly less in the females than in the males, but there are individual exceptions in both sexes.

FRONTAL BONE—FORAMEN MAGNUM—AVERAGE PROPORTIONS AND THEIR COMPARISON

Sex and Locality	Number of specimens	Average diameter frontal minimum (*a*)	Number of specimens	Average diameter frontal maximum (*b*)	Number of specimens	Average percental relation of *a* to *b*	Number of specimens	Foramen magnum: average diameter
Males		cm.		cm.				cm.
Louisiana	17	*9.6* (8.5–10.2)	6	*12.1* (11.7–12.8)	6	*80* (74.8–83.0)	10	*3.45* (3.3–3.7)
Arkansas: Boytt's Field	13	*9.6* (8.7–10.2)	3	*11.9* (11.3–12.2)	3	*81* (77.0–83.6)	6	*3.3* (3.0–3.5)
Arkansas: Menard and Greer cemeteries	3	*10.0* (9.8–10.15)	1	12.3	1	18	2	*3.25* (3.15–3.35)
Arkansas: Drew and Mississippi counties	23	*9.45* (8.4–10.7)	11	*12.05* (11.4–13.3)	11	*79.5* (73.7–84.9)	14	*3.33* (3.05–3.7)
Females								
Louisiana	17	*9.4* (8.3–9.9)	6	*11.7* (11.1–12.0)	6	*79* (73.5–85.6)	14	*3.18* (3.0–3.5)
Arkansas: Boytt's Field	10	*9.3* (8.6–10.2)	3	*11.3* (11.0–11.8)	3	*81* (78.2–86.4)	3	*3.13* (3.0–3.3)
Arkansas: Menard and Greer cemeteries	7	*9.2* (8.8–9.85)	4	*11.9* (11.5–12.4)	4	*77* (74.5–79.1)	5	*3.15* (2.9–3.3)
Arkansas: Drew and Mississippi counties	13	*9.15* (8.1–9.5)	7	*11.5* (11.2–12.0)	7	*79* (76.3–82.6)	8	*3.14* (3.0–3.3)

LOWER JAW—AVERAGE DIMENSIONS AND COMPARISON

Sex and Locality	Number of specimens	Average bigonial diameter	Number of specimens	Average angle	Number of specimens	Average height at symphisis
Males		cm.		degrees		cm.
Louisiana	11	*10.7* (9.5–11.6)	13	*118* (109–131)	11	*3.75* (3.4–4.4)
Arkansas: Boytt's Field	9	*10.5* (9.9–11.2)	10	*120* (112–128)	10	*3.65* (3.2–3.9)
Arkansas: Menard and Greer cemeteries	1	10.9	1	116.5	1	3.40 ....
Arkansas: Drew and Mississippi counties	8	*10.7* (10.0–11.9)	8	*118* (108–126)	7	*3.65* (3.2–4.0)
Females						
Louisiana	13	*10.0* (9.1–11.3)	14	*121* (109–134)	12	*3.40* (3.2–3.7)
Arkansas: Boytt's Field	7	*9.9* (9.5–10.7)	8	*122* (110–128)	7	*3.47* (3.1–3.6)
Arkansas: Menard and Greer cemeteries	4	*9.95* (9.8–10.1)	3	*125* (121–129)	3	*3.30* (3.15–3.5)

The angle of the lower jaw, which was measured whenever possible on both sides, was found—taking the Louisiana skulls of both sexes—equal on the two sides in two, larger on the right in six, and larger on the left in eight cases. Taking all the available specimens together, it was equal in five cases, larger on the right in twelve, and larger on the left in seventeen. These results seem to indicate that there is a slight tendency toward a larger angle on the left side.

The sexual differences are again very slight. In the averages the female lower jaws of all the groups show a slightly wider angle, but, as an aid in sexual identification in individual cases, that proportion in this particular region is of little value.

IV.

OBSERVATIONS ON THE ARKANSAS AND LOUISIANA CRANIA.

Cranial Vault.

The conformation of the vault differs, naturally, in accordance with the type of the skull. As to the non-deformed brachycephalic specimens, practically the same description will apply as was given in last year's report on the Menard and Greer crania: the forehead in these skulls is usually well built, though rather narrow in front; the sagittal region is either uniformly rounded from side to side or shows a small to moderate elevation along the sagittal suture; the parietal and occipital regions are uniformly convex, without any special protrusion of the parietal bossæ or of the mid-occipital region.

The temporal ridges, while usually fairly well marked, are in no case exceptional nor do they in any case approach near the sagittal line. On the occiput several of the specimens, mentioned specially in the paragraph on anomalies, show a pronounced, more or less extensive, torus. A number of skulls, including some of those with a torus, exhibit also a marked (in one case a very decided) depression in middle at and above the inion. This fossa is characteristic and is not accidental. It is observable in the Arkansas crania and occurs with greater or less rarity in Indian skulls from other parts of North America. It apparently served for an attachment either of a ligament (extreme part of the lig. nuchæ) or of portions of the trapezius muscle.

The more oblong Louisiana skulls are characterized: by a sagittal elevation more pronounced and broader than that occurring in the brachycephals, and this crest extends occasionally forward to the frontal bone; by the greater frequency of a low forehead; by lesser convexity of the parietal regions but greater distinctness of the eminences; and by more or less protrusion of the occiput.

Supra-orbital Ridges.

Compared with what may be regarded as the average in whites, the supra-orbital ridges in the two series of skulls under consideration appear as follows:[1]

	Arkansas		Louisiana	
	Males	Females	Males	Females
Small	4	6	2	6
Moderate	1	4	3	11
Well developed (about as medium in white males)	8	1	8	1
Pronounced	0	0	4	0

It is seen that of the male skulls (of the sexual determination of which there

[1] In 23 male and 13 female Arkansas skulls from the old collections in the National Museum, the condition of the supra-orbital ridges is: None, M. 0, F. 1; small, M. 3, F. 10; moderate, M. 8, F. 0; well developed, M. 10, F. 2; pronounced, M. 2.

can be no doubt in more than perhaps one instance) there are a number that show lack of development in these features, while on the other hand there are several female crania in which the ridges reach moderate dimensions, and two in which they approach closely in extent to what would be regarded as masculine. The rather limited development of the ridges in some of the males agrees with what has been observed in the 1908 series of skulls from Arkansas.

Mastoids.

As in the case of the Menard and Greer skulls, the mastoid processes in both the Arkansas and the Louisiana series often show only a moderate development in the males, while in the females they frequently exceed the average determined in the same sex in whites and in Indians from other regions. In detail the conditions, compared with white male and female standards respectively, are as follows:[1]

	Arkansas		Louisiana	
	Males	Females	Males	Females
Small	1	0	5	0
Moderate to medium	11	2	6	11
Above medium	1	8	6	7

The rather strong development of these processes in the Arkansas and Louisiana females no doubt bears relation to a good development in this sex of the sterno-cleido-mastoid muscles, the growth of which was probably favored by the habitual carrying by these women of heavy jars and other burdens on their heads.

Sutures.

Serration.—The serration of the cranial sutures in Indians is generally less complicated than in the whites, and the Arkansas and Louisiana skulls here dealt with form no exception. The conditions are actually as follows:[2]

	Arkansas		Louisiana	
	Males	Females	Males	Females
Near medium in whites	3	0	5	0
Sub-medium (2–3 Broca)	6	7	10	11
More or less simple (1–2 Broca)	4	3	1	6

It is interesting to observe that the only skulls in which the serration approaches the approximate average in whites are those of males, and that, on the

[1] In 23 male and 12 females Arkansas skulls of the earlier National Museum collections, the mastoids are (male compared to male and female to female standards): Small, M. 6, F. 0; medium, M. 16, F. 8; above medium, M. 1, F. 4.

[2] In 22 male and 13 female Arkansas skulls from the earlier collections in the National Museum, the condition of the serration of sutures is: Near medium, M. 1, F. 0; sub-medium, M. 14, F. 8; more or less simple, M. 7, F. 5.

other hand, the simpler forms of the sutures are more frequent in the females in both of the groups. No regular relation has been observed between the grade of serration of the sutures and the size of the skull, though all the specimens in which the serration is best developed are large. Perhaps a very large series of skulls might produce more definite results.

Pterions.—In all the crania, with one exception, the pterions are of the H type, *i. e.*, the articulation is spheno-parietal. The exception occurs in female skull 255.213, from Louisiana, where on the left side the temporal squama forms a narrow articulation with the frontal. No relation is apparent between the width of the spheno-parietal articulation and the sex or the size of the skull. As to locality, the male skulls from Louisiana average broader pterions than those from Arkansas, but the female crania from the two localities present approximately the same conditions. The details are as follows:[1]

	Arkansas		Louisiana	
Pterion H-form	Males	Females	Males	Females
Broad	1	2	6	2
Medium	6	4	10	11
Narrow	3	1	0	2

Occlusion.—The order of external synostosis in the cranial sutures shows a number of interesting features as well as numerous irregularities. (See table, pp. 200, 201.)

The details show that, dorsally, synostosis begins in the majority of these crania in the coronal suture, and is followed in a short time by a similar process in the sagittal, temporo-occipital, and nasal sutures. The process next manifests itself in the greatest degree in the spheno-parietal and spheno-frontal articulations, and lastly in the lambdoid suture. The temporo-parietal articulation was found patent in all the specimens.

The table shows that there are numerous individual irregularities in the appearance and progress of the synostoses. In this particular series these irregularities are doubtless augmented by the effect of the artificial deformations.

As to localities in the different sutures at which synostosis begins, it was noticed that in the coronal it is almost invariably in the portions below and at the temporal ridges, following which points of obliteration appear along the median third of the suture; in the sagittal the most frequent points of beginning of the obliteration are the obelion and the summit; in the lambdoid it begins at various points in the median third and advances downward on each side; in the temporo-sphenoidal the parts that co-ossify earliest are the inferior portions; and in the nasal suture obliteration usually begins at its distal extremity. This fairly agrees with the results of observations on American crania from other localities.[2] The order of

[1] In 19 male and 11 female Arkansas skulls from the old collections in the National Museum, the condition of the pterions is: H-Form—Broad, M. 0, F. 2; medium, M. 6, F. 5; sub-medium, M. 10, F. 3; Narrow, M. 2, F. 1; K-Form—None.

[2] See the writer's "Contribution to the Physical Anthropology of California," Berkeley, 1906, University of California Publications, Vol. 4, No. 2, table 5.

SYNOSTOSES OBSERVED IN THE ARKANSAS AND LOUISIANA SKULLS

Skull No.	Coronal suture: obliteration	Sagittal suture: obliteration	Lambdoid suture: obliteration	Temporo-occipital sutures: obliteration	Pteric sutures: obliteration	Fronto-sphenoidal sutures: obliteration	Nasal sutures: obliteration
			ARKANSAS—MALES				
255.119	None	None	None	None	None	None	Some
.121	Below ridges	About obelion and spots elsewhere	Marked traces	Fully	Fully	Fully	Fully
.123	None	None	None	None	None	None	None
.124	Below ridges	Traces about obelion	Few traces	Left fully; right patent	Fully	Fully	Traces
.125	On left from bregma to within 2.7 cm. above pterion; right patent	None	None	Most of right and some of left	None	None	Trace
.126	None	"	"	None	"	"	None
.127	"	"	"	"	"	"	"
.128	"	"	"	"	"	"	Traces
.141	At bregma below ridges	Nearly all	Median four-fifths	Both fully	For the greater part	For the greater part	For the greater part
.145	All	All	Nearly all	Left fully; right patent	?	?	?
.149	None	None	None	None	None	None	Nearly all
.150	Nearly all below ridges	Larger part	Some on the left	Third of left; right patent	Both	Both	"
.152	Below the ridges and in the median third	All	All but a short portion of each extremity	Half of right; left ?	?	?	All
			ARKANSAS—FEMALES				
255.120	None	None	None	None	None	None	Larger part
.122	"	"	"	"	"	"	?
.129	Nearly all below ridges	Anterior half	"	"	"	"	None
.130	None	None	"	"	"	"	"
.143	"	"	"	"	"	"	"
.144	"	"	"	"	"	"	?
.146	"	"	"	"	"	"	Larger part
.147	"	"	"	Some in left	"	"	Some
.148	Considerable, especially below ridges	"	"	?	?	?	?
.151	On the left about temporal ridge	"	"	?	?	Both fully	Some

SYNOSTOSES: CONTINUED

LOUISIANA—MALES

255.102	None	None	None	?	?	?	?
.104	"	Some about obelion	Traces	None	None	None	Lower third
.106	Traces on left below temporal ridge	Slight about obelion	"	"	"	"	?
.107	?	None	None	"	"	"	None
.111	None	"	"	"	"	"	"
.114	All	Nearly all	Traces	Inferior half of each	?	?	Lower third
.115	All below ridges, some above	Most	None	Inferior half of left	Both fully	Right fully; left patent	Distal fourth
.154	All below ridges, some above	"	Most of median two-thirds	Inferior third of left; all of right	All	All	All
.201	All	All but posterior fifth	Middle third	Inferior three-fifths of each	?	?	?
.203	Below the ridges	At numerous points	None	?	None	Some	Some
.204	None	None	"	Some in right	?	All	None
.209	Most	All	Median two-thirds	Some in each	All	"	?
.210	Below the ridges	"	At numerous points	Inferior half of left	None	Left all; right patent	All
.211	All	"	Most	All	All	All	"
.215	Below the ridges	Nearly all	At some points	Inferior two-thirds of left	"	"	Inferior fourth
.217	None	At summit and obelion	Median three-fifths	Inferior three-fourths of each	?	?	Some
.218	"	None	None	None	None	None	None

LOUISIANA—FEMALES

255.094	None	Some	None	None	?	?	?
.095	"	None	"	"	None	None	None
.103	"	"	"	"	"	"	The tip
.105	On left below temporal ridge	"	"	"	"	Both fully	None
.112	Below the ridges and in points above	About the summit	"	Inferior three-fourths of left	All	All	All
.113	None	On the summit	Superior two-thirds of right side	Inferior two-thirds of right	Both	Left fully, right patent	None (partly broken off)
.116	"	All	None	None	None	None	?
.117	"	None	"	"	"	"	None
.118	Below the ridges	"	"	Inferior fourth of left	Both all	Parts of each	All
.202	Advanced below ridges, especially on right	"	"	None	None	None	None
.207	None, middle three-fifths	"	"	"	"	"	?
.208	None	Middle four-fifths	"	Traces in both	?	All	All
.212	"	None	Traces	None	None	None	Larger part
.213	"	"	None	Middle third of each	"	"	None
.214	"	"	"	None	"	"	The tip
.216	"	"	"	"	"	"	None
.219	"	"	"	Middle half of left	"	"	Some
.220	"	"	"	None	"	"	"

occlusion among whites, according to data obtained by Hamy, Broca, and Topinard,[1] is sagittal, coronal below temporal ridges, lambdoid, coronal about bregma, and, finally, temporo-parietal. In all probability obliteration of the frontal suture commences earlier and advances more rapidly in the Indian than in the whites; however, the precise differences in these respects between the two races remain to be determined by further observation. According to the writer's experience there exist many individual variations in regard to suture occlusion in the whites also.

Sutural Bones.—If we except a few specimens, sutural bones are scarce in both the Arkansas and the Louisiana crania. The same was observed in the series of Arkansas skulls described in 1908, and is evident in the collections of crania from Arkansas and Louisiana already in the National Museum from other sources. In three of the Arkansas and six of the Louisiana skulls of the present series no Wormian or other sutural bones at all are present.

The sutural ossicles are not only few in number but they are generally small. They are found most frequently in the lambdoid, next in frequency being the temporo-occipital sutures and the squamo-mastoid angle. In two cases a sutural ossicle is present in the posterior extremity of the sagittal. In male skull 255.119, Arkansas, a small sutural bone exists between the two nasals; and in male skull 255.203, Louisiana, there is an epactal. In only two instances are there small epipterics.

FACIAL FEATURES.

Orbits.

On the whole the orbits show nothing extraordinary. They differ quite widely in individuals, as shown in the measurements of height. There are no cases of very massive or of square orbits.

Nasal Bones. Upper Maxillæ.

The *nasion depression* as a rule is fairly well marked in the males and more or less shallow in the females, being in both quite comparable with that in whites.

The *nasal bones* usually have fair breadth. An exception to this, accompanied with an abnormality of the right bone, has been mentioned (page 176), and there are two other cases in which the breadth of the bones is sub-medium.

The *nasal bridge* averages moderate height. There are no high noses, and in three of the skulls the bridge is rather low.

The *inferior nasal border* (that of the notches) is prevalently more or less dull, as seen from the following details:[2]

	Arkansas		Louisiana	
	Males	Females	Males	Females
Border sharp as average in whites	5	3	2	5
Somewhat dull	1	3	5	9
Dull	5	3	7	3

[1] Topinard, P., Éléments d'Anthropologie Générale, Paris, 1885, p. 645.

[2] In 14 male and 7 female Arkansas skulls of the old National Museum collections, the condition of the inferior nasal border is as follows: Border sharp, M. 7, F. 4; somewhat dull, M. 1, F. 0; dull, M. 5, F. 2; slight to moderate sub-nasal fossæ were present in M. 6 and F. 0.

In four additional cases the border is more or less dull on one side and sharp on the other. In one Arkansas male, one Arkansas female, and six Louisiana male crania, the dullness of the border is accompanied by small to well-marked sub-nasal fossæ; and in one Arkansas female and two Louisiana male skulls there are sub-nasal grooves or gutters. In an additional Louisiana male skull (No 255.215) a slight sub-nasal fossa occurs on the right, and a moderate groove on the left. These two manifestations are doubtless only modes of the same structural tendency.

The *nasal spine* on the whole is less developed in Indian crania than in those of the whites, and the skulls of the series under consideration form no exception to this rule. They exhibit this feature as follows:[1]

	Arkansas		Louisiana	
	Males	Females	Males	Females
Well-developed nasal spine (about as average in whites)	1	0	4	3
Sub-medium height as well as protrusion (= length)	8	7	7	9
No height and sub-medium protrusion	4	2	3	4

Prognathism has been treated under "Measurements." The protrusion of the alveolar processes ranges from what would be regarded as approximately medium in whites to that which is decidedly above such medium but does not equal the protrusion in the skulls of most members of the black races. In general the alveolar processes in the Arkansas and Louisiana skulls are regularly arched. There are no diastemæ, and, on the other hand, in a few cases only is there any crowding. (See under *Teeth*, page 208.)

Sub-orbital Fossæ.—By this term the writer designates the entire large depression extending over the anterior surface of the superior maxilla beneath the orbit and particularly beneath that portion of the malar bone which forms part of the lower border of the orbit. This depression, known imperfectly as the "canine fossa," is of some racial importance, since in some peoples it is generally much less developed than in others, and may even be wholly wanting, as in the case of many of the Eskimo. In Indians it often shows less depth than about the average in whites; yet there are also localities from which some of the Indian crania, at least, show sub-orbital fossæ of fair depth. As will be seen from the table (p. 204), this is somewhat the case in both the series of skulls under consideration.[2]

[1] In 13 male and 7 female Arkansas skulls from the old collections in the National Museum, the condition of the nasal spine is; Well developed, M. 4, F. 0; sub-medium height as well as protrusion, M. 6, F. 6; no height, sub-medium protrusion, M. 3, F. 1.

[2] In 13 male and 7 female skulls of the old National Museum collections, the condition of the sub-orbital fossæ is as follows: Well marked, M. 3, F. 5; sub-medium, M. 4, F. 1; shallow to absent, M. 6, F. 1.

	Arkansas		Louisiana	
	Males	Females	Males	Females
Well-marked	3	1	2	9
Sub-medium	3	3	4	6
Shallow to absent	5	3	6	2

The Lower Jaws.

The *lower jaws* are generally of moderate dimensions, and all have a moderate to fairly well-marked prominence of the chin. In the skulls of seven of the Arkansas males, three of the Arkansas females, seven of the Louisiana males, and seven of the Louisiana females, the chin is more or less square. The bone is generally of good strength, but in no case very massive. The angles show a pronounced eversion in one case only, the lower jaw of female skull 255.103, Louisiana.

Malar Bones. Zygomæ.

The *malar bones*, in both the Arkansas and the Louisiana series, generally show moderate to good development, and very few unusual features. The malar tuberosity, or torus is well marked in a few cases, and the same is true of the processus marginalis. None of the malar bones shows division, and there is not even a case of a marked fissure in the processus temporalis.

The *zygomæ* present nothing extraordinary.

Base of the Skull.

About the base of the skulls there are several features of racial significance to which attention has been directed by the writer already in several instances. These are, principally, the relative depression of the petrous portions of the temporal bones (as seen when the upturned skull is examined from above), and the size of the middle lacerated foramina. They are related to the development of the brain, vary, in general, directly with the mental activities of the individual, and their differences extend to entire groups of people.

In a man or woman of the white race who has been well educated and has been well above the average in mental activity, the development of the brain has affected the skull in such a manner that the more yielding parts surrounding the petrous portions have been pressed outward, leaving the petrous portions themselves in a decided depression; and as such skulls have also grown in breadth and length more than is usual, while the petrous portions remained unaltered, the middle lacerated foramina have become more spacious. In individuals in whom extraordinary mental activity, with consequent brain growth and skull expansion, has not been realized, the depression of the petrous portions and the size of the middle lacerated foramina remain small. In the child there is no depression of the former, and the

size of the latter is insignificant. In people belonging to races not characterized by extraordinary mental activity, such as the negroes and the Australians, the inferior surface of the petrous portions is either level with or but slightly below both the neighboring surfaces of the basilar process and the sphenoid bone, and the middle lacerated foramina range from very small to small. Occasionally in these cases a flattened portion of the apex of the petrous part extends clear over on to the body of the sphenoid, leaving but a small lateral aperture representing the middle lacerated foramen. In the anthropoid apes, even those whose skulls are best developed, the inferior surface of the petrous portions is slightly *raised* (as seen from above in the upturned skull) above the basilar process and the sphenoidal parts, while the foramina lacera media are either insignificant or entirely absent. Finally, in the lower monkeys and in quadrupeds there is a still more pronounced portion of the inferior part of the petrous wedge clear above (in upright position of the skull, below) the neighboring bone surfaces.

It is thus seen that these two features, namely, (1) the depression of the petrous portions within the other structures of the base, and (2) the grade of depression and the size of the middle lacerated foramina, are of significance and always worthy of attention. In the Indian they range in general from what would be about medium in whites to approximately the average in the African negro; but they differ somewhat according to locality. In the Arkansas and Louisiana crania of the present series, the conditions regarding these two features are as follows:[1]

	Arkansas		Louisiana	
	Males	Females	Males	Females
Petrous Portions				
Level or almost level with the neighboring surfaces	3	3	0	8
Slightly depressed	4	4	7	7
Moderately depressed	4	2	6	3
Well depressed	0	0	1	0
Middle lacerated foramina				
Small	4	5	3	11
Moderate	4	4	8	3

The smaller Arkansas group does not clearly show sexual differences, but in the Louisiana series the female skulls indicate a decidedly inferior character, that is, extraordinary brain development is exhibited less frequently than in the males. Somewhat similar differences exist, according to the writer's observations, also in the white race.

The *styloids* are more often imperfectly developed or wanting altogether in the Indians than in whites; but there are individuals in whom the styloids reach proportions that would be regarded as average or well developed in whites, and the number of such individuals may be larger in some localities than it is in others. In the Arkansas and Louisiana crania the conditions are as given in the table (p. 206).

Paramastoids.—A slight to moderate, non-articular, irregular elevation, between

[1] In 15 male and 11 female Arkansas skulls from the old collections in the National Museum, the condition of the petrous portions is: Level, M. 1, F. 1; slightly depressed, M. 7, F. 9; moderately depressed, M. 5, F. 1; well depressed, M. 2, F. 0.

the distal end of the jugular process and the condyle, in the region of the insertion of the rectus capitis lateralis muscle, is frequently met with in Indian crania, and those of the series under discussion form no exception. On the other hand, a large cylindrical and articular process, while by no means unknown in the Indians, is of rare occurrence. Regarding the present series, two of the male and one of the female skulls from Louisiana show moderate non-articular paramastoids, while one cranium (female No. 255.103) has on the right side an articular process 0.9 cm. high and of equal diameter.[1]

The *posterior condyloid foramina* are less often absent or diminutive in the Indian skulls from Arkansas and Louisiana than in those of whites. There are in all 28 skulls in which these structures can be examined, and of these they are normal

CONDITION OF STYLOIDS.*

	Arkansas		Louisiana	
	Males	Females	Males	Females
Styloids approximately as well developed as in average whites of same sex	5	3	9	5
Sub-medium	3	2	1	5
Small	0	1	1	4
Rudimentary or absent (in latter case only a small base being visible)	2	5	2	2
Special	1 Right rudimentary; left sub-medium 1 Right medium; left rudimentary	—	1 Right sub-medium; left only base 1 Right very small; left moderate 1 Right base only; left medium 1 Right sub-medium; left medium	1 Right moderate; left only base 1 Right only base; left rudimentary

* In 20 male and 11 female Arkansas skulls from the old collections in the National Museum, the condition of the styloids is as follows: Medium, M. 8, F. 1; sub-medium, M. 5, F. 0; rudimentary or absent, M. 4, F. 6. Special: Males, 1 = right, medium, left only base; 1 = no trace of even the bases; 1 = right rudimentary, left medium; Females, 1 = no trace of even the bases; 1 = right rudimentary, left medium; 1 = right sub-medium, left medium; 1 = right rudimentary, left base only.

in 23, or 82 per cent. Of the remaining 5 skulls, one of the canals is wholly occluded in two and partly occluded in three. The obliteration occurs in male as well as in female skulls; it is present twice on the right side and three times on the left.

The *jugular foramen* is found, as in whites, to be more frequently larger on the right side, as will be seen by the following table:[2]

	Arkansas		Louisiana	
	Males	Females	Males	Females
About equal	1	1	3	3
Right larger	5	2	9	10
Left larger	3	2	2	1

[1] In 12 male and 10 female Arkansas skulls from the old collections in the National Museum, the condition of the para-mastoids is as follows: Moderate non-articular elevation on each side; M. 0, F. 2.

[2] In 20 male and 11 female Arkansas skulls from the old collections in the National Museum, the condition of the jugular foramina is: About equal, M. 0, F. 0; right larger, M. 18, F. 10; left larger, M. 2, F. 1.

The *spinous processes* in the collection under examination offer numerous irregularities, being sometimes unusually developed. The variations in this particular structure, though of no great importance, will well repay a separate thorough study.

A feature of frequent occurrence in skulls of Indians, as well as of whites, is the projections of bone arising on one side from the spinous process or the vicinity thereof, and on the other from the superior or inferior part of the external pterygoid plate. Occasionally these processes join and give rise to a pterygo-spinous or pterygo-sphenoidal foramen. The significance of these structures, notwithstanding the fact that they have long been well known to anatomists, and are recognized as being formed by ossification of fibrous bands connecting the different points, is not yet so clear as might be desired.

In the Arkansas and Louisiana crania a greater or lesser tendency toward the formation of the inferior pterygo-spinous foramen was observed, but other conditions, as indicated below, were likewise noted.

PTERYGO-SPINOUS FORAMINA.*

	Arkansas		Louisiana	
	Males	Females	Males	Females
Tendency to superior pterygo-spinous foramen, both sides	3	0	0	0
Tendency to inferior pterygo-spinous foramen:				
Right	1	0	1	3
Left	1	0	0	1
Both sides	0	0	2	5
Inferior pterygo-spinous foramen from three-fifths to nearly complete	255.119, right ?; left four-fifths 255.141, right three-fifths; left four-fifths 255.152, right ?; left nearly complete	0	255.115, right half; left nearly complete 255.211, right three-fifths; left three-fifths 255.215, right nearly complete; left nearly complete 255.217, right two-thirds; left nearly complete	255.095, right nearly complete; and tendency also on each side to superior foramen 255.105, right nearly complete; left nearly complete
Inferior foramen complete	255.127, right complete; left nearly complete	255.143, pterygo-sphenoidal complete on left (tendency on right)	255.201, pterygo-spinous complete on left (slight tendency on right) 255.218, pterygo-sphenoidal complete on each side	0

* In 14 male and 7 female Arkansas skulls from the old collections in the National Museum, the condition of the pterygo-spinous foramina is as follows: No trace, M. 3, F. 1; tendency to superior, M. 2, F. 1; tendency to inferior, M. 9, F. 4; inferior complete, M. 1, F. 0; inferior lateral (pterygo-sphenoidal) complete, M. 0, F. 1.

Defects of ossification in the floor of the auditory meatus.—Of such defects, or dehiscences (Hyrtl), which are very frequent and often large in the case of Indians

in some parts of the Western Hemisphere, particularly in Peru, the skulls from Arkansas and Louisiana show the following instances:[1]

	Arkansas		Louisiana	
	Males	Females	Males	Females
No defects	12	7	14	11
With defects	1	2	3	7

Of the 22 skulls from Arkansas, defects in the floor of the meatus are present in three (= 14 per cent.); of the 35 skulls from Louisiana, such defects are found in 10 (= 29 per cent.).

Taking into consideration the 10 Arkansas skulls described last year, and the 30 additional skulls in the National Museum collections—a total of 62 from that State—a unilateral or bilateral dehiscence is present in 10, or 16 per cent.

Unfortunately there are only 4 additional skulls from Louisiana in the Museum. Adding this number to those above given, it is found that of the 39 skulls from that State, 10 show a defect in the floor of the meatus, on one or both sides, or in 26 per cent. of the total. These figures indicate an excess of the abnormality in the Louisiana crania.

As to sex, the abnormality is more frequent in the females. Of the 30 male skulls in the present series it occurs in 4, or 13 per cent.; while of the 27 females it exists in 9, or 33 per cent. Taking all the available skulls from both Arkansas and Louisiana, aggregating 60 males and 47 females, 7 of the former, or approximately 12 per cent., and 12 of the latter, or nearly 26 per cent., exhibit the condition. These results illustrate that, at least in Arkansas and Louisiana, the defects of ossification in the floor of the auditory meatus are more than twice as common in the skulls of females as in those of males.

Teeth.

The condition of the *dentition* is shown in the table on page 209.

There is only a single instance of a supernumerary tooth (see under *Abnormalities of Teeth*); and there are no pronounced defects in the form of the teeth remaining and in condition for examination.

In *size* the teeth in every case are moderate, not exceeding the average in whites. This applies to all except the third molars, which occasionally are small. (See the details following.)

More or less *wear* is exhibited in the teeth of all the skulls. It is evident that this process commences early in adult life, and occasionally before. No case of extreme wear came to notice. In a number of the crania the wear of the teeth is not uniform over the whole denture.

[1] In 22 male and 10 female skulls from Arkansas of the old collections in the National Museum, such defects are as follows: No defects, M. 19, F. 8; small to moderate defects, M. 3, F. 2.

	Arkansas		Louisiana	
	Males	Females	Males	Females
Dentition complete above; (below ?)	2	0	2	1
Complete below; (above ?)	0	2	2	1
Complete above and below	8	2	6	7
Defects	255.123, upper third left molar never erupted; below complete	255.129, upper complete; lower third molar never erupted	255.104, upper third right molar never erupted; lower complete	255.113, upper third left molar never erupted; right ?
	255.128, upper complete; lower third molars never erupted	255.147, upper?; lower third right molar never erupted	255.210, upper third right molar never erupted; lower ?	255.216, upper third molars never erupted; lower complete
	255.152, upper third molar never erupted; lower complete			

The *upper incisors*, when present and well preserved, show generally the shovel-like, sharply outlined ventral concavity so characteristic of these teeth in the Indians, and to which attention has hitherto been called by the writer.

The number and the morphological characters of the *cusps* on the molars, when the latter are sufficiently preserved to permit observation, resemble those in whites. The number of cusps on the different molars is as follows:

Cuspid Formulæ of the Molars

	Museum No.	Upper						Lower					
		Right			Left			Right			Left		
		1st	2d	3d	1st	2d	3d	1st	2d	3d	1st	2d	3d
Arkansas Males	225.124	4	$3\frac{1}{2}$*	3	4	4	?			?			
	.126	4	4	3	?	?	?	5	4	$4\frac{2}{2}$	5	4	$4\frac{2}{2}$
	.127	4	4	3	4	4	?	5	$4\frac{1}{2}$	6	5	$4\frac{1}{2}$	?
	.145	4	$3\frac{1}{2}$	3	4	$3\frac{1}{2}$	3	5	?	?	5	?	?
	.150	4	$3\frac{1}{2}$	3	4	$3\frac{1}{2}$	3	5	4	$4\frac{1}{2}$	5	4	$4\frac{1}{2}$
Arkansas Females	255.130	4	3	3	4	3	3	5	4	$4\frac{1}{2}$	5	4	$3\frac{1}{2}$
Louisiana Males	255.107	4	$3\frac{1}{2}$	3	4	3	IRREGULAR	?	?	?	?	?	?
Louisiana Females	255.116	4	3	?	4	3	"	5	4	4	5	4	4
	.117	4	4	?	4	4	"	5	4	$3\frac{2}{2}$	5	4	$4\frac{1}{2}$
	.202	4	4	3	4	4	?	5	5	?	5	5	?

* Cusps designated by halves are those decidedly smaller than the regular cusps, yet clearly marked. The upper figure in each case expresses the number of these small cusps.

Abnormalities of the teeth are in detail as follows:

In male skull 255.121, Arkansas, both upper third molars are, as indicated by the alveoli, small in size.

In male skulls 255.123, 255.145, and 255.150, Arkansas, the upper front teeth show slight crowding.

In male skull 255.149, Arkansas, the right upper third molar is small.

In female skull 255.129, Arkansas, the right upper second bicuspid has a tri-lobe root.

In female skull 255.130, Arkansas, both upper third molars are of sub-medium dimensions.

In male skull 255.107, Louisiana, the upper third molars are sub-medium in size.

In male skull 255.115, Louisiana, there is a moderate crowding of the upper front teeth.

In male skull 255.210, Louisiana, the right lower third molar points forward and upward, while the left upper third molar is of sub-medium size.

In female skull 255.116, Louisiana, the right upper third molar is diminutive.

In female skull 255.202, Louisiana, the upper third molars are sub-medium in size.

In female skull 255.216, Louisiana, there is a supernumerary tooth between the right upper lateral incisor and canine; it is smaller than the incisor, but much like it in form.

Diseased Teeth.—Decayed teeth, while not very common or numerous, are nevertheless quite frequent in the Louisiana crania, and in even a greater degree the same is true of teeth lost during life, doubtless due to caries in the great majority of cases. The conditions in this respect, so far as could be ascertained, are as follows:

	Arkansas		Louisiana	
	Males	Females	Males	Females
Skulls with no teeth decayed or lost during life	7	1	5	3
Skulls with one or more teeth decayed or lost during life	6	7	11	15

It was not possible in all cases to determine the sequence of the decay; it is nevertheless plain that among the people of both Louisiana and Arkansas, the first teeth affected by caries, both in frequency and time, were the molars, then the bicuspids, lastly the more anterior teeth. Regarding the latter, only one case of caries was observed in the canines, and the incisors that remain are all healthy, but in many instances the loss of one or more of these teeth makes the observation incomplete.

V.

MEASUREMENTS AND DESCRIPTION OF THE BONES.

Bones other than Skulls.

The measurements and observations concerning the Arkansas and Louisiana bones will be most conveniently presented together, as are the descriptive notes on the crania of the two series. Like the skulls, they present many similarities. There are slight differences here and there, but on the whole the data regarding both the

long and the other bones serve to strengthen the conclusion that we are dealing with two groups of the same people, or rather of the same mixture of people.

The separation of the bones pertaining to individuals respectively with rounded and with oblong skulls would have been desirable, but, for reasons already given, this has not been feasible.

On the whole the specimens show all the characteristics exhibited by Indian bones, though some of these characteristics, such as platycnemy, are less pronounced or are less general than in the case of bones from other localities.

Many of the bones are diseased; these are dealt with in the final section of the report. Arthritic conditions are common, and inflammatory lesions, which in all probability can be ascribed to syphilis, also are frequent.

As to anomalies, those of an important nature rarely occur in the Arkansas series. The fifth lumbar vertebra of male skeleton 255.127 shows a defect in fusion of the laminae. And the right patella of male skeleton 255.141 is characterized by an unusually pronounced vastus externus notch (Fig. 9 d).

Among the Louisiana bones the left female humerus 255.108 shows a peculiar irregular exostosis back of the lower third of the deltoid ridge (Fig. 5, e). Right tibia of male skeleton 255.100 shows a pronounced popliteal ridge 16.0 cm. long. The right innominate bone of male skeleton 255.210, and the right and left innominate bones of female skeleton 255.105, have the medio-iliac foramen. The sacrum of 255.217, male, shows a considerable enlargement of the right transverse mass of its first segment and a large irregular facet thereon, by which it articulates with the enlarged lateral process of the last lumbar vertebra (Fig. 8). The seventh cervical vertebra of male 255.215 shows a foramen 5 by 2.5 mm. (defect of fusion in its spinous process), slightly distad from the middle (Fig. 9 a).

The first dorsal of 255.212, female, shows a peculiar lateral process on the left side, appearing like an anchylosed accessory rib, though both regular costal articular facets are present (Fig. 9 b). Finally, the fourth lumbar of 255.219, female, shows a separation of the posterior part of its neural arch, and its articulation with the pedicles by a very irregular facet on each side; both the third and fifth lumbars being normal (Fig. 9 c).

The Humerus.

The total number of paired humeri is 92, representing 28 males and 18 females. Their average length ranges in the males from 32.6 to 32.7 cm., and in the females from 29.8 to 32.0 cm., almost exactly the averages obtained by the writer from observations on 378 male and 133 female white Americans from eastern United States.[1] The relation between the female and male arm-bones is approximately as 92 to 100, which also is equal to that in whites. This length of humerus would correspond, according to Manouvrier's standards, to a stature average of about 166 cm. in males and about 154 cm. in females. This point will be dealt with again under *Femur* (page 215).

[1] This and additional material which will be here referred to is in preparation for special publication.

The dimensions of the shaft at the middle show an average lateral diameter[1] very nearly as large as in the whites; but the average antero-posterior diameter[2] is decidedly smaller. This is best shown in the percental relation of these two diameters, or index of the shaft at middle. This in the writer's series of 304 white American males averages on the right 81.6, and on the left 83.9; and in 97 American females, on the right 78.8, and on the left 79.6. In the Indians under consideration, the same index averages 74.4 (Arkansas) and 76.8 (Louisiana) on the right, and 75.4 (Arkansas) and 77.8 (Louisiana) on the left in the males; while in the females it is 69.8 (Arkansas) and 73.1 (Louisiana) on the right, with 73.1 (Arkansas) and 73.9 (Louisiana) on the left. These proportions show that the humeri of the Arkansas and Louisiana Indians are both weaker and flatter than those of the average white Americans. In both the white and the Indian, and in both sexes, the left humerus shows a higher index of the shaft than the right bone; this is due to the fact that its lateral diameter is smaller, as compared with that of the right humerus, while the difference is less in its antero-posterior dimension on the two sides.

HUMERUS—LENGTH: DIMENSIONS AND INDEX AT MIDDLE. RADIUS—LENGTH: RADIO-HUMERAL INDEX

Sex and Locality	Side	Number of specimens	Average length (maximum)	Number of specimens	Average diameter lateral at middle	Number of specimens	Average diameter antero-posterior at middle	Number of specimens	Average index of shaft at middle	Number of specimens	Average length (maximum) of radius	Number of specimens	Average radio-humeral index
Males			cm.		cm.		cm.		cm.		cm.		
Arkansas: Boytt's Field	Right	9*	*32.7* (29.5–34.2)	10	*2.3* (2.0–2.6)	10	*1.70* (1.55–1.85)	10	*74.4* (69.4–83.7)	3	*25.0* (24.4–25.7)	3	*75.6* (75.3–77.9)
	Left	9	*32.6* (29.4–34.2)	10	*2.2* (1.95–2.35)	10	*1.67* (1.5–1.8)	10	*75.4* (72.7–80.9)	3	*24.7* (24.1–25.5)	3	*75.0* (74.2–79.0)
Louisiana	Right	19	*32.7* (30.6–35.2)	18	*2.3* (1.85–2.7)	18	*1.76* (1.35–1.95)	18	*76.8* (64.6–90.7)	10	*25.3* (24.1–26.5)	9	*77.8* (74.6–80.1)
	Left	19	*32.7* (30.2–35.8)	18	*2.2* (1.85–2.7)	18	*1.74* (1.35–2.05)	18	*77.8* (68.1–89.1)	10	*25.1* (22.9–26.5)	9	*77.6* (72.9–80.5)
Females													
Arkansas: Boytt's Field	Right	2	*28.9* (27.6–30.2)	5	*2.05* (1.8–2.2)	5	*1.4* (1.3–1.6)	5	*69.8* (66.7–72.7)	—	—	—	—
	Left	2	*28.9* (28.0–29.9)	5	*2.0* (1.75–2.2)	5	*1.4* (1.15–1.6)	5	*70.3* (65.0–80.0)	—	—	—	—
Louisiana	Right	13	*30.2* (28.3–32.0)	13	*2.05* (1.8–2.2)	13	*1.5* (1.35–1.6)	13	*73.1* (67.5–80.6)	14	*22.7* (21.9–23.7)	6	*76.2* (74.2–78.6)
	Left	13	*29.8* (28.1–32.0)	13	*2.0* (1.9–2.2)	13	*1.5* (1.3–1.6)	13	*73.9* (63.4–84.2)	14	*22.6* (21.6–24.1)	6	*77.4* (75.2–80.6)

* Applies to pairs only.

[1] Parallel with the anterior surface of the bone.
[2] At right angles to its anterior surface.

The shape of the shaft in cross-section at middle approaches, for the greater part (as will be seen from the details given below), the prismatic, or a prismatic with a broadening of the anterior border into a fourth surface. There is also a fair percentage of plano-convex humeri which represent the juvenile form.

HUMERUS—SHAPE OF SHAFT AT MIDDLE (*a*).

Types of Shape	Arkansas				Louisiana			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Number of specimens examined	*11*	*11*	*5*	*6*	*21*	*21*	*19*	*18*
Types:								
1 or near 1 (*b*)	3	4	3	1	9	9	17	12
2 or near 2 (*c*)	0	0	0	0	1	2	0	2
4 or near 4 (*d*)	5	4	1	1	4	9	1	3
p. c. or near p. c. (*e*)	3	3	1	4	7	1	1	1

a See, in this regard, as well as in connection with the same item under other headings, Hrdlicka, A. Typical Forms of Shaft of Long Bones, Proc. Ass. Amer. Anat., 14th Sess., 1900, p. [illegible]

b Ordinary prismatic.

c Lateral prismatic.

d Anterior border at and below middle is broadened into a fourth surface.

e Plano-convex.

The torsion was found, barring a few individual exceptions, to be moderate.

The deltoid eminence, while generally well marked, is pronounced only in the humeri of one skeleton, namely, female 255.130, Arkansas.

None of the humeri examined bears more than a trace of the supra-condyloid process.

The articular extremities show the usual sex differences.

The septum between the coronoid and the olecranon fossæ is defective in a large proportion of these humeri. These defects appear to be more common in the Arkansas series than in that from Louisiana, and, as usual, they are decidedly more frequent in the females than in the males. As to the sides, there is in these series a slight preponderance of the defects on the right, which is contrary to the rule, and is probably accidental. As in other cases the perforation is often found on both sides of the body. The relatively great frequency of these defects, which are formed principally during childhood, by physiological absorption of the bone composing the septum, will be noted from the fact that, among 2371 humeri of whites of both sexes, examined by the writer, such defects existed only in 99, or 4.2 per cent. In the following table are presented the details in regard to this peculiarity in the humeri under consideration.

HUMERUS—DEFECTS OF THE SEPTUM

Defects	Arkansas				Louisiana			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Total number of specimens examined	*11*	*12*	*4*	*6*	*18*	*23*	*20*	*17*
Defects: pin-point	—	1	—	—	2	—	—	—
small	3	2	1	—	—	2	—	4
medium	—	3	2	3	—	3	7	6
large	2	1	—	1	1	1	1	2
special	—	—	—	—	—	1 (*a*)	—	—
Total defects	5	7	3	4	3	7	8	12
Percentage of bones with defects	*45%*	*58%*	*75%*	*67%*	*16.5%*	*30%*	*40%*	*71%*
Percentage of bones with defects according to locality	Arkansas, *58%*				Louisiana, *38.5%*			
Percentage of bones with defects according to sex	Males, *34.5%*				Females, *57.5%*			
Percentage of bones with defects according to side	Right, *57.5%*				Left, *41.2%*			

(*a*) Shows two perforations.

The Radius.

As with the humerus, the dimensions of the radius are quite similar in the Arkansas and Louisiana skeletons; and, as in whites, the bone averages slightly longer on the right side. In strength and curvature the radii of both groups are generally moderate.

The principal interest of the radius lies in the comparison of its length with that of the humerus, or in the so-called radio-humeral index. This proportion is decidedly greater in Indians than in whites, showing that the Indian forearm is relatively longer, a feature common to the less advanced races. The examination of the bones of 526 white males and 212 white females gave the writer an average radio-humeral index of 73.6 for the former and 72.8 for the latter. In the Indians, as is seen in the above table, the index averages approximately 75.3 for the Arkansas and 77.7 for the Louisiana males, with 76.8 for the Louisiana females. Both in whites and in Indian males it is slightly higher on the right than on the left; the small group of female skeletons from Louisiana form an exception.

The Ulna.

The average dimensions of the ulna are given in a table in the section on *Fibulæ* (page 220). There are only 39 ulnæ in condition to permit measurement.

The bones of the right side exceed perceptibly in length those of the left side, in both the males and the females. The curvature is usually fairly well marked. The pronator quadratus ridge is generally well developed, and occasionally, as in female ulna 255.219, Louisiana, is pronounced. The shape of the shafts of the ulnæ is given in the next table. The shafts, it is seen, are chiefly prismatic; but there are also numerous cases in which there are four instead of three distinct surfaces, due to duplication of the posterior plane, and many instances in which one or more of the surfaces are pronouncedly concave.

Ulna—Shape of Shafts at Middle

Types of Shape	Arkansas				Louisiana			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Number of specimens examined	*6*	*9*	*2*	*1*	*16*	*14*	*19*	*17*
Types: 1 (*a*)	4	4	1	1	4	4	7	9
3 (*b*)	2	2	—	—	2	5	3	1
3*a* (*c*)	—	—	—	—	—	—	2	2
3*b* (*d*)	—	2	1	—	1	—	1	1
4 (*e*)	—	1	—	—	7	4	6	3
Unclassified	—	—	—	—	2	1	—	1

a Prismatic or near prismatic. *b* Flexor surface concave. *c* Extensor surface concave. *d* Both flexor and extensor surfaces concave. *e* Four surfaces well defined.

The Femur.

The length of the femur in the Arkansas and Louisiana groups shows slight differences, but as these are unequal in the two sexes, they are probably without significance. The length of the female femur is to that of the male approximately as 92 to 100, the same relation as with the humeri. In most of the subdivisions the left bone is of very slightly greater average length than the right, a phenomenon observed also in whites and in other races.

Additional measurements of the femur pertain to the sub-trochanteric flattening, which in the whites has been studied principally by Manouvrier.[1] Of this

[1] Manouvrier, L., La Platymèrie. 46. The same, La Platymèrie. C.-R. du Congr. intern. d'Anthrop., Paris, 1889. 47. The same, La Platymèrie. Rev. mens. de l'École d'Anthrop. de Paris, 1892. 51. The same, Étude sur les variations morphologiques du corps du fémur dans l'espèce humaine. Bull. de la Soc. d'Anthrop. de Paris, 1893.

See also, for additional bibliography and observations: Klaatsch, H., Die Wichtigsten Variationen am Skelet der Freien Unteren Extremität des Menschen und ihre Bedeutung für das Abstammungsproblem. Ergebnisse der Anatomie und Entwickelungsgeschichte, X, Wiesbaden, 1900, p. 599, *et seq.*

flattening, which is more pronounced in Indians than in whites, two measurements were taken, namely, the greatest lateral and the smallest antero-posterior diameter. The percental relation of these dimensions gives the index of the flattening. This index, it is seen, is lower in the females than in the males, showing that the female femur is the flatter at this point. As to the two sides, it differs but little. In the two areas under consideration, the index of flattening is perceptibly higher in the femora of the Arkansas males than in those of Louisiana. The female groups show an opposite condition, but this may be due to the small number of specimens obtained.

FEMUR—LENGTH: MEASUREMENTS AND INDEX OF SUBTROCHANTERIC FLATTENING

Sex and Locality	Side	Number of specimens	Average bicondylar length of femur	Number of specimens	Average minimum breadth at subtrochanteric flattening (*a*)	Number of specimens	Average minimum thickness at subtrochanteric flattening (*b*)	Number of specimens	Index of platymery $\left(\frac{b \times 100}{a}\right)$
Males			cm.		cm.		cm.		
Arkansas: Boytt's Field	Right	14	*45.6* (42.0–48.8)	15	*3.2* (2.75–3.65)	15	*2.5* (2.15–2.75)	15	*76.7* (70.4–84.6)
	Left	14	*45.6* (42.1–48.7)	15	*3.2* (2.8–3.5)	15	*2.5* (2.2–2.75)	15	*76.6* (72.1–80.8)
Louisiana	Right	19	*44.1* (39.9–48.3)	23	*3.3* (3.0–3.6)	23	*2.4* (2.0–2.7)	23	*74.2* (65.6–86.7)
	Left	19	*44.2* (39.8–48.4)	23	*3.3* (2.9–3.6)	23	*2.4* (2.0–2.7)	23	*74.6* (64.7–83.3)
Females									
Arkansas: Boytt's Field	Right	4	*41.0* (38.9–42.4)	6	*3.2* (3.15–3.35)	7	*2.2* (1.75–2.45)	6	*69.5* (54.7–75.4)
	Left	4	*41.2* (39.2–42.8)	6	*3.2* (3.05–3.3)	7	*2.2* (1.70–2.45)	6	*70.2* (53.1–78.7)
Louisiana	Right	12	*41.25* (38.8–43.1)	13	*3.05* (2.8–3.3)	13	*2.2* (2.05–2.4)	13	*72.9* (62.1–81.1)
	Left	12	*41.3* (38.4–43.3)	13	*3.05* (2.85–3.3)	13	*2.2* (2.0–2.35)	13	*72.2* (63.5–81.0)

The relation between the length of the humerus and the length of the femur, or humero-femoral index, approaches 72 in this series, or nearly the same as is observed in whites.

The shaft is massive and generally well developed.

The linea aspera, as will be seen by the following notes, is in numerous cases exceptionally high, giving the so-called pilasteric character to the shaft; but this feature is plainly a compensatory one, for a more than ordinarily greater backward bending of the shaft, about or above its middle, is present in these bones.

The shape of the shaft predominantly approaches the prismatic, but pure types of this form are rare. Next in frequency is the elliptical shape, followed by the plano-convex. It is interesting to note that the plano-convex shaft is found only in the males. A somewhat similar condition prevails in the case of the round shaft, while, on the other hand, the elliptical form is much more frequent in the female femora.

FEMUR—LINEA ASPERA

Condition of Linea Aspera	Arkansas				Louisiana			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Number of specimens examined	*16*	*17*	*7*	*6*	*28*	*23*	*16*	*18*
Medium	5	5	7	6	13	17	13	14
High	7	9	—	—	11	3	3	4
Very high	4	3	—	—	4	3	—	—

FEMUR—SHAPE OF SHAFT AT MIDDLE

Types of Shape	Arkansas				Louisiana			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Number of specimens examined	*14*	*16*	*7*	*6*	*25*	*21*	*17*	*17*
Types:* *I* or near *I*	8	9	4	2	14	12	10	8
e or near *e*	—	1	1	2	3	3	6	[illegible]
r or near *r*	1	1	—	1	5	2	—	—
4 or near *4*	—	—	2	1	1	2	1	1
p. c. (6) or near	5	5	—	—	2	2	—	—

* *I* Ordinary prismatic.
e Elliptical.
r Round.
4 Anterior surface divided by a vertical ridge into two surfaces.
p. c. (or 6) plano-convex.

As will be seen in the next table, gluteal tuberosities, or third trochanters, are fairly numerous, particularly in the bones from Louisiana. This process is also slightly more frequent in this series among the females than among the males. The oblong form is decidedly more numerous than the rounded one.

Individual specimens that deserve separate notice, in addition to those mentioned in Section VI, are as follows:

Male femora 255.121, 255.128, 255.141, Arkansas: Angle of neck of these specimens on both sides is very obtuse.

Right male femur 255.124, Arkansas: Exceptional grade of torsion.

Female femur 255.130, Arkansas: The shaft shows on the antero-external surface, upper third, a smooth, bony elevation, 2.3 cm. long, 0.4 cm. high, and 1.4 cm. broad.

Right male femur 255.205, Louisiana: Torsion pronounced; left bone?

Female femora 255.105a, Louisiana: Both show marked torsion.

Female right femur 255.112, Louisiana: The gluteal tuberosity is 4.0 cm. long and 1.0 cm. high.

FEMORA—THIRD TROCHANTER, OR GLUTEAL TUBEROSITY

Variety of Third Trochanter	Arkansas				Louisiana			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Number of specimens examined	*13*	*15*	*7*	*6*	*27*	*21*	*17*	*19*
Small rounded	—	1*	—	1	1	2	—	—
Small oblong	2	—	4	2	6	6	5	5
Medium rounded	1	—	—	—	1	—	2	1
Medium oblong	1	1	—	1	4	4	1	4
Pronounced rounded	—	—	—	—	—	—	—	1
Pronounced oblong	—	1	—	—	2	1	4	1
Absent	9	12	3	2	13	8	5	7
Percentage of bones with third trochanter, all grades and variations	*31%*	*20%*	*57%*	*67%*	*52%*	*62%*	*71%*	*63%*
Percentage of bones with third trochanter, according to locality	Arkansas, *36.5%*				Louisiana, *61%*			
Percentage of bones with third trochanter, according to sex	Males, *55%*				Females, *65%*			

* Three moderately rounded tubercles.

The Tibia.

The length of the tibiæ, like that of the femora, averages slightly greater in the male skeletons from Arkansas than in those from Louisiana; as to the females, the bones from Arkansas are too few in number to be of value for comparison. The right tibia averages slightly longer than the left. The relation of the length of the tibia to that of the femur, *i. e.*, the tibio-femoral index, which ranges in whites from about 80 to 81, is perceptibly greater in the skeletons under consideration, especially those from Louisiana. It is a curious local peculiarity that this index, in both males and females, is somewhat higher in Louisiana than in Arkansas. The sexual differences, as in whites, are quite immaterial; and nothing definite appears from the series as to differences on the two sides of the body.

In addition to its length, the tibia was measured also as to its two principal

diameters at the middle of the shaft. These diameters,[1] as determined by the writer in nearly 2000 normal adult bones of whites,[2] produce for the antero-posterior dimension in the males an average of 3.13 cm. on the right, and 3.14 on the left; while in the females it is 2.72 cm. on the right and 2.57 c. m. on the left.

TIBIA—LENGTH; DIMENSIONS AND INDEX AT MIDDLE; TIBIO-FEMORAL INDEX

Sex and Locality	Side	Number of specimens	Average length (greatest length less spine)	Number of specimens	Average diameter antero posterior at middle	Number of specimens	Average diameter lateral at middle	Number of specimens	Average index of shaft at middle	Number of specimens	Average tibio-femoral index
Males			cm.		cm.		cm.				
Arkansas: Boytt's Field	Right	7	*38.5* (36.4–41.6)	9	*3.45* (3.2–3.85)	9	*2.2* (1.95–2.45)	8	*63.7* (51.9–81.7)	5	*82.1* (79.8–85.2)
	Left	7	*38.3* (35.9–41.6)	9	*3.5* (2.85–3.8)	9	*2.2* (2.0–2.35)	8	*63.6* (52.6–82.3)	5	*82.6* (79.0–85.4)
Louisiana	Right	13	*37.10* (34.4–40.3)	17	*3.3* (2.8–3.7)	17	*2.2* (1.9–2.6)	17	*68.45* (58.6–78.6)	9	*84.2* (79.8–88.6)
	Left	13	*37.08* (34.5–40.3)	17	*3.3* (2.9–3.7)	17	*2.2* (1.85–2.6)	17	*68.5* (56.8–79.3)	9	*84.3* (81.1–86.6)
Females											
Arkansas: Boytt's Field	Right	2	*33.15* (33.1–33.2)	4	*2.8* (2.75–2.9)	4	*1.95* (1.85–2.05)	4	*68.7* (63.8–73.2)	2	*82.7* (80.1–85.4)
	Left	2	*33.15* (32.7–33.4)	4	*2.8* (2.7–2.95)	4	*2.0* (1.8–2.3)	4	*69.8* (66.1–78.0)	2	*82.0* (80.5–83.7)
Louisiana	Right	10	*34.8* (32.2–37.8)	9	*2.9* (2.6–3.05)	9	*1.9* (1.65–2.05)	9	*64.5* (55.0–70.2)	6	*84.3* (81.9–88.2)
	Left	10	*34.7* (32.3–37.6)	9	*2.9* (2.65–3.1)	9	*1.85* (1.55–2.05)	9	*63.9* (55.3–71.7)	6	*83.5* (80.8–86.5)

The lateral diameter of the tibia averages in white males, on the right side 2.24 cm., on the left 2.20 cm.; in the females, on the right 2.05 cm., and on the left 1.86 cm. This dimension gives a breadth-height index of the shaft of the tibia of 71.1 in the white males and 71.9 in the white females. In the Indians the antero-posterior diameter in all the series is somewhat superior to that in whites, while the lateral dimension averages equal or smaller. This gives rise to a smaller index of the shaft, expressing greater platycnemy in the Indian. Comparisons as to locality, sex, and side, in the two Indian series, are not satisfactory, due to the small and irregular number of specimens.

As to the shape of the shaft of the tibia, the ordinary prismatic is found to prevail, but lateral prismatic shafts are also quite numerous. A large proportion of the tibiæ, however, show a shaft characterized by pronounced concavity of the external surface in the region of the tibialis anticus muscle, while numerous others

[1] The antero-posterior diameter is the *maximum* measurement, the lateral diameter being that at a right angle to the antero posterior axis of the bone. The latter is taken in such a way that the anterior border of the tibia lies on the rod of the sliding compass in the middle of its opening.

[2] See "Study of the Normal Tibia," The American Anthropologist, October, 1898, p. 307 *et seq.*; also Proc. Assoc. Amer. Anatomists, 11th Annual Session, New York, 1898.

are of type 4, which distinctly shows four instead of three surfaces, the additional plane resulting from a duplication of the posterior surface by a ridge which follows the line of the septum between the flexor longus digitorum and the tibialis posticus muscles.

TIBIA—SHAPE OF SHAFT AT MIDDLE

Types of Shape	Arkansas				Louisiana			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Number of specimens examined	*14*	*13*	*4*	*6*	*20*	*22*	*12*	*12*
Types: 1 or near 1 (*a*)	2	4	2	4	5	9	5	4
2 or near 2	1	1	2	2	4	3	1	3
3 or near 3	3	3	—	—	6	4	2	1
4 or near 4	7	4	—	—	5	6	2	3
5 or near 5	1	—	—	—	—	—	2	1
6 or near 6	—	1 (*b*)	—	—	—	—	—	—

(*a*) 1 Ordinary prismatic.
2 Lateral prismatic.
3 External surface markedly concave.
4 Posterior surface divided into two distinct surfaces by a vertical ridge.
5 Posterior surface concave, external border indistinct.
6 Lateral prismatic, with postero-lateral and antero-lateral surfaces markedly convex and anterior border very dull.

(*b*) Specimen 255.138*a* was partly fused with tibia, which may account for this exceptional shape in an Indian.

The inclination of the head of the tibia was, in no case, very pronounced.

The Fibula.

The proportion of fibulæ available for measurement is rather small, though fragments are numerous. The measurements of length show practically equal averages for the bones of the two sides.

The shape approaches most frequently the ordinary or the lateral prismatic. In female skeleton 255.097, Louisiana, both the fibulæ are unusually flat.

The Clavicle.

The collection contains 31 clavicles that can be measured. These bones show nearly the same dimensions in the two areas from which the material was gathered. They also show that the left clavicle is on the average somewhat longer than the right. A similar condition exists, as we know from the studies of Pasteau[1] and others, in whites and in other races.

[1] Pasteau, E. Recherches sur les proportions de la clavicule dans les sexes et dans les races. Thèse. Paris, 1879.

The curves of the clavicle are moderate in all but two cases (male 255.123 and male 255.127, Arkansas), in which they are very marked.

None of the bones is massive.

Rhomboid impression or facet is present in slight to moderate form in all, and is pronounced in male 255.123, Arkansas.

Female clavicle 255.095, Louisiana, shows a very prominent conoid tubercle.

ULNA; FIBULA; CLAVICLE—LENGTH

Sex and Locality	Side	Number of specimens	Average length (maximum) of the ulna	Number of specimens	Average length (maximum) of the fibula	Number of specimens	Average length (maximum) of the clavicle
Males			cm.		cm.		cm.
Arkansas: Boytt's Field	Right	5	*27.3* (25.4–29.3)	3	*36.2* (35.6–36.6)	4	*15.1* (13.2–16.4)
	Left	—	....	—	....	4	*15.7* (14.0–17.1)
Louisiana	Right	7	*26.9* (25.9–28.1)	4	*36.75* (35.3–39.2)	7	*15.2* (13.6–16.1)
	Left	7	*26.6* (25.1–27.8)	4	*36.7* (35.3–39.1)	7	*15.5* (14.1–16.3)
Females							
Arkansas: Boytt's Field	Right	2	*24.1* (23.8–24.5)	—	....	1	14.0
	Left	—	....	2	*32.4* (32.0–32.8)	—	....
Louisiana	Right	9	*24.4* (23.8–25.4)	4	*34.7* (34.2–36.3)	4	*13.5* (12.9–14.1)
	Left	9	*24.3* (23.4–25.3)	4	*34.7* (34.0–36.3)	4	*13.7* (13.1–14.5)

FIBULA—SHAPE OF SHAFT AT MIDDLE

Types of Shape	Arkansas				Louisiana			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Number of specimens examined	*2*	*4*	—	*1*	*16*	*11*	*6*	*5*
Types: 1 (*a*)	1	2	—	1	5	1	—	1
2 or 2*a* (*b*)	—	—	—	—	5	8	3	2
3 or 3*a* (*c*)	—	1	—	—	3	2	1	—
3*b* (*d*)	1	—	—	—	—	—	1	1
4 (*e*)	—	1	—	—	3	—	1	1

a Ordinary quadrilateral, approaching prismatic.
b Approaching lateral prismatic.
c External or internal surface concave.
d Both external and internal surfaces concave.
e Five distinct surfaces (formation by a vertical ridge of two planes from the external surface).

The Sternum.

From Arkansas there are two bodies and four manubria, and from Louisiana four bodies and seven manubria. In none of these cases is the manubrium attached to the body. The bodies vary considerably in all dimensions.

The Scapula.

Of the scapulæ there are but few fragments, and three imperfect pieces that could be measured. All of these are from Louisiana. In descriptive features they exhibit nothing of special interest.

MEASUREMENTS

Sex	Number	Side	Height: inferior to superior angle	Height: inferior angle to intersection of spine and median border	Breadth (Broca)	Breadth-height index total	Breadth-height index inferior
			cm.	cm.	cm.		
Male	255.201	Right	16.0	11.7	10.5	*65.6*	*89.7*
Male	.106	Left	?	11.0	10.7	*?*	*97.3*
Female	.095	Left	13.5	11.0	?	*?*	*?*

The Vertebræ.

The dimensions of the vertebræ are generally moderate, the bones being never very large or massive. The principal anatomical features are similar to those in whites. As to variations in number, little can be determined on account of the incompleteness of the sets.

The principal anomalies of the vertebræ are mentioned at the beginning of this section.

A peculiar feature is the very frequent occurrence of more or less marked lateral asymmetry of the bodies of the dorsal vertebræ, without indication of disease.

The Pelvis.

There are in all 14 pelves, 4 male and 10 female, on which measurements are possible. Owing to the small number of specimens in the individual groups, the data are not useful for comparison, and must remain simply as so many records to be utilized with additional material in the future.

The general index of the pelvis averages higher in the male skeletons from the two sections, as well as in the female skeletons from Louisiana, than it does in the whites, thus showing relatively great breadth. The average index of the inlet, which in whites ranges from 79 to 80, is likewise greater in most of the Indian skeletons.

In addition to the pelves, there are present a number of single ossa innominata, the measurements of which are given in the table (p. 223). The figures give some interesting indications, but the number of specimens is too small for definite deductions.

PELVIS—DIMENSIONS AND INDICES

Sex and Locality	Number of specimens	Average maximum height (*a*)	Average maximum breadth (*b*)	Average index of pelvis $\left(\frac{a \times 100}{b}\right)$	Number of specimens	Average greatest breadth of the inlet	Average depth (diameter antero posterior) of the inlet	Average index of the inlet
Males		cm.	cm.			cm.	cm.	
Arkansas: Boytt's Field	1	20.2	27.0	134	1	11.8	....	....
Louisiana	6	*21.3* (20.8–22.2)	*27.9* (26.3–29.6)	*130.6* (119.5–135.8)	6	*12.1* (11.4–13.3)	*11.0* (9.7–12.6)	*91.6* (75.2–107.0)
Females								
Arkansas: Boytt's Field	2	*20.6* (20.2–21.0)	*26.7* (26.2–27.2)	*129.6* (129.5–129.7)	3	*13.0* (12.4–13.8)	*10.9* (10.3–12.1)	*84.1* (81.2–87.7)
Louisiana	4	*19.5* (18.2–20.3)	*27.6* (26.7–28.6)	*141.4* (136–152.7)	3	*13.5* (12.9–14.3)	*10.4* (9.2–11.5)	*77.5* (69.7–89.1)

The Sacrum.

The total number of sacra that could be measured is 13, but some additional specimens are available for observation. The indices are all lower than in the whites, showing that the sacrum is relatively high, as in the negro.

OSSA INNOMINATA; SACRUM—AVERAGE MEASUREMENTS AND INDICES

OSSA INNOMINATA

Sex and Locality	Side	Number of specimens	Average height. (maximum) (*a*)	Number of specimens	Average breadth (between superior iliac spines) (*b*)	Number of specimens	Average breadth-height index $\left(\frac{b \times 100}{a}\right)$
Males			cm.		cm.		
Arkansas: Boytt's Field	Right	2	*20.0* (19.8–20.2)	—	....	—	....
	Left	2	*19.9* (19.8–20.0)	--	....	—	....
Louisiana	Right	2	*22.05* (22.0–22.1)	2	*16.05* (15.4–16.7)	2	*72.8* (70.0–75.6)
	Left	2	*22.15* (22.1–22.2)	2	*15.85* (15.3–16.4)	2	*71.6* (69.2–73.9)
Females							
Arkansas: Boytt's Field	Right	2	*20.6* (20.2–21.0)	1	15.4	1	73.3
	Left	2	*20.6* (20.2–21.0)	1	15.7	1	74.8
Louisiana	Right	2	*20.1* (20.1–20.1)	2	*15.0* (14.8–15.2)	2	*74.6* (73.6–75.6)
	Left	2	*20.1* (19.9–20.3)	2	*15.45* (15.3–15.6)	2	*76.9* (75.4–78.4)

SACRUM

Sex and Locality	Number of specimens	Average height (in middle) (*a*)	Average breadth (maximum) (*b*)	Average index $\left(\frac{b \times 100}{a}\right)$
Males		cm.	cm.	
Arkansas: Boytt's Field	2	*11.55* (11.0–12.1)	*11.7* (11.5–11.9)	*101.6* (95.0–108.2)
Louisiana	4	*11.8* (11.4–12.4)	*11.7* (10.7–12.5)	*99.1* (93.9–107.0)
Females				
Arkansas: Boytt's Field	1	12.1	12.8	105.8
Louisiana	6	*11.1* (9.6–12.3)	*11.8* (11.1–12.4)	*106.9* (100.8–115.6)

As to the number of segments composing the sacrum, it is found that in three-fourths of the cases the bone has five, and in the remainder of the specimens, six. In addition there is a tendency in one case (Fig. 8) to assimilation of the last lumbar.

Of the extra segments one is lumbar and four are coccygeal.

The curvature is more often accentuated in the females than in the males, as in whites. As will be seen from the details presented in the next table, it also begins high more frequently in the females than in the males.

The neural canal is defective for the greater part from the fourth, or from below the fourth, spinous process downward. This also is most frequently the case in whites.

SACRUM—CHARACTERISTICS

	Arkansas		Louisiana	
	Males	Females	Males	Females
Segments: 5	3	—	6 (1 tending to assimilation of last lumbar)	5
6	—	1	2	2
Extra segment is	—	1 coccygeal	1 lumbar 1 coccygeal	2 coccygeal
Curvature:				
small	—	—	2	—
moderate	3	—	5	2
good	—	2	2	5
Curvature begins with				
first segment	—	1	3	5
second segment	3	1	3	2
third segment	—	—	1	—
fourth segment	—	—	1	—
Neural canal exposed from				
below third spinous process	—	1	2	—
at fourth	—	—	1	4
below fourth	3	—	3	2
at fifth	—	—	1	1
below fifth	—	1	—	—

The Patellæ.

The patellæ of the Arkansas and Louisiana skeletons are, as will be noted in the measurements given below, generally of moderate dimensions, with an average breadth slightly exceeding the height. There is very little difference in the bones from the two localities. The patella in the female is smaller in all proportions than that in the male; the breadth-height index is quite similar. The right and left bones differ but slightly.

PATELLA—AVERAGE DIMENSIONS AND BREADTH-HEIGHT INDEX

Proportions	Arkansas							
	Males				Females			
	Number of specimens	Right	Number of specimens	Left	Number of specimens	Right	Number of specimens	Left
Breadth (maximum), cm.	6	*4.35* (4.15–4.7)	5	*4.2* (4.0–4.65)	3	*3.8* (3.6–4.15)	—	——
Height (maximum), cm.	6	*4.25* (4.05–4.5)	5	*4.3* (3.9–4.65)	3	*3.8* (3.6–3.95)	—	——
Thickness (maximum), cm.	6	*2.0* (1.7–2.2)	5	*1.9* (1.8–2.15)	3	*1.8* (1.7–1.85)	—	——
Breadth-height index $\left(\frac{breadth \times 100}{height}\right)$	6	*102.5* (92.1–105.8)	5	*98.1* (95.4–100.0)	3	*100.6* (91.1–109.2)	—	——

Proportions	Louisiana							
	Males				Females			
	Number of specimens	Right	Number of specimens	Left	Number of specimens	Right	Number of specimens	Left
Breadth (maximum), cm.	5	*4.35* (4.15–4.6)	5	*4.4* (4.1–4.65)	4	*3.9* (3.75–4.1)	4	*3.9* (3.75–4.0)
Height (maximum), cm.	5	*4.3* (3.9–4.85)	5	*4.2* (3.95–4.75)	4	*3.8* (3.7–3.85)	4	*3.8* (3.8–3.85)
Thickness (maximum), cm.	5	*2.0* (1.9–2.1)	5	*2.0* (1.9–2.1)	4	*1.8* (1.75–1.85)	4	*1.8* (1.75–1.9)
Breadth-height index $\left(\frac{breadth \times 100}{height}\right)$	5	*101.1* (85.6–112.8)	5	*104.2* (91.6–113.4)	4	*103.6* (100–110.8)	4	*102.3* (97.4–105.3)

An interesting feature in regard to the patella is the occasional presence of the vastus externus notch, *i. e.*, a more or less marked defect in the border of the bone in the locality of the vastus externus insertion. This notch, which is seen rather frequently in Egyptian bones, and is also met occasionally among the whites, is present in more than half the male specimens and in more than a third of the patellæ of females. It is, however, seldom pronounced, the majority of the bones showing only traces of the feature.

The patellæ of male skeletons 255.111 and 255.222, Louisiana, show each an extraordinarily developed apex.

Patella—The Vastus Externus Notch

	Arkansas				Louisiana				Totals			
	Males		Females		Males		Females		Arkansas	Louisiana	Males	Females
	Right	Left	Right	Left	Right	Left	Right	Left				
Number of specimens examined	*7*	*6*	*3*	—	*8*	*10*	*8*	*7*	*16*	*33*	*31*	*18*
Notch absent	4	3	1	—	2	5	6	6	*50%*	*58%*	*45%*	*72%*
Trace	1	2	2	—	1	3	1	1	*31%*	*18%*	*23%*	*22%*
Small	1	—	—	—	4	1	1	—	*6%*	*18%*	*19%*	*6%*
Moderate	—	—	—	—	1	1	—	—	—	*6%*	*6%*	—
Pronounced	1	1	—	—	—	—	—	—	*13%*	—	*6%*	—

The Os Calcis.

There are 23 pairs of these bones sufficiently preserved to be measured. Their dimensions, as well as their breadth-height index, differ but slightly in the two localities. The bones also differ very little on the two sides, the right bone being on the average very slightly the larger. The female bones, however, are decidedly smaller than those of the males..

The measurements and indices form an interesting basis for future comparison.

Os Calcis: Average Dimensions and Breadth-height Index

Proportions *	Arkansas							
	Males				Females			
	Number of specimens	Right	Number of specimens	Left	Number of specimens	Right	Number of specimens	Left
Length (maximum), cm.	6	*8.05* (7.4–8.45)	6	*8.05* (7.3–8.5)	1	6.9	1	6.9
Breadth (minimum at middle of body), cm.	6	*2.7* (2.5–2.95)	6	*2.7* (2.55–2.9)	1	2.4	1	2.4
Height (maximum at middle of body), cm.	6	*4.0* (3.7–4.3)	6	*3.9* (3.6–4.1)	1	3.55	1	3.4
Breadth-height index $\left(\frac{breadth \times 100}{height}\right)$	6	*67.7* (60.5–72.4)	6	*69.5* (63.4–73.0)	1	67.6	1	70.6

* Pairs only.

Os Calcis—continued

Proportions*	Louisiana							
	Males				Females			
	Number of specimens	Right	Number of specimens	Left	Number of specimens	Right	Number of specimens	Left
Length (maximum), cm.	11	*8.0* (7.45–8.4)	11	*7.95* (7.5–8.25)	5	*7.4* (7.25–7.65)	5	*7.4* (7.05–7.65)
Breadth (minimum at middle of body), cm.	11	*2.75* (2.5–2.9)	11	*2.8* (2.6–3.0)	5	*2.45* (2.35–2.6)	5	*2.5* (2.3–2.6)
Height (maximum at middle of body), cm.	11	*4.0* (3.85–4.2)	11	*3.95* (3.65–4.2)	5	*3.5* (3.2–3.7)	5	*3.5* (3.2–3.7)
Breadth-height index $\left(\frac{breadth \times 100}{height}\right)$	11	*68.4* (61.9–74.0)	11	*70.8* (67.5–73.4)	5	*69.4* (64.9–75.0)	5	*70.8* (68.7–78.1)

* Pairs only.

In 72 specimens from both sexes in which the facets for the astragalus can be examined, there are two of these facets in 21 (29 per cent.) and three in 51 cases (71 per cent.). These proportions are almost identical in the skeletons from the two regions: 2 facets in 32 per cent. of the bones from Arkansas, and in 29 per cent. of the bones from Louisiana.

As to sexual differences, two facets exist in 26 per cent. of the males and in 37 per cent. of the females, showing a perceptible preponderance for the latter.

The sustentaculum tali generally shows fair to marked projection. The peroneal spine is frequently well marked. In the more pronounced cases it shows an articular-like surface for the play of the tendon on its under side. The internal tubercle often shows anteriorly, at the insertion of the flexor brevis digitorum, slight to moderate exostoses.

The left os calcis of male skeleton 255.106, Louisiana, presents a rough semilunar notch or defect antero-interiorly in the margin of the foremost astragalus facet and the adjoining border.

Astragalus.

The number of clearly-separated articular facets for the os calcis on the astragalus does not by any means correspond with the number of those on the heel bone. Thus, a clear separation by an interval of an anterior and a lateral astragalus facet is present in only four of the 43 specimens, or approximately 10 per cent.

Os trigonum was not found.

The Scaphoid.

Of this bone only a few are present, and among these there is but one that shows any peculiarity. This is from female skeleton 255.096, Louisiana, and the peculiarity consists of a rather pronounced pointed process which rises from the middle of the inferior surface of the bone and anteriorly has an articular facet. The same specimen shows also a small cuboid facet.

The Cuboid.

This bone, of which a fair number of specimens are in hand, shows, as a rule, an elevated or an unelevated facet for the sesamoid in the tendon of the peroneus longus.

The First Metatarsal.

This bone is generally of ordinary form and of moderate dimensions. None of the specimens shows any special features. Their length, given below, indicates close similarity with respect to the two areas from which they came.

First Metatarsal: Dimensions

	Arkansas							
	Males				Females			
	Number of specimens	Right	Number of specimens	Left	Number of specimens	Right	Number of specimens	Left
Average length (maximum), cm.	4*	*6.2* (5.8–6.8)	5	*6.2* (5.8–6.5)	1	5.65	2	*5.65* (5.55–5.75)
	Louisiana							
	Males				**Females**			
	Number of specimens	**Right**	**Number of specimens**	**Left**	**Number of specimens**	**Right**	**Number of specimens**	**Left**
Average length (maximum), cm.	5	*6.0* (5.7–6.2)	4	*6.3* (6.0–6.5)	2	*6.0* (5.6–6.4)	1	5.7

* Not pairs.

Phalanges. Hand Bones.

Only a few of these bones were recovered, and, beyond some pathological lesions, referred to under Section VI (p. 229), they show nothing of special interest.

VI. PATHOLOGICAL OBSERVATIONS. DETAILS.

ARKANSAS.

Males.

255.119.[1]

Vertebræ: moderate marginal exostoses on one lumbar.

Phalanges: the first right terminal phalanx of the foot has moderate excrescences on its plantar surface.

255.121.[2]

Femora: right—moderate inflammatory changes about linea aspera, middle fourth;

left—moderate inflammatory changes with augmentation in size at inner lip of linea aspera, below middle, on adjacent bone, and on shaft, posteriorly, below the third fourth of the same from above.

Tibiæ: right—moderate inflammatory changes over large part of surface of shaft.

Clavicles: right—inflammatory changes on distal end.

Vertebræ: one cervical and two lumbar have marginal exostoses; the former shows also roughened (arthritic) articular surfaces on the processes.

Os calcis: right anchylosed with astragalus (Fig. 7, c).

Cuneiform: right middle fused completely with the metatarsal of the second toe (Fig. 7, b).

255.121a.[3]

Tibiæ: left—slight inflammatory changes on shaft.

255.123.[4]

Skull: A gumma (in all probability), hollow in frontal, 3 cm. above nasion and near median line; also a scar, probably of similar origin (*i. e.*, syphilitic), 5.5 cm. above nasion, in median line.

Femora: right—inflammatory changes posteriorly, above lowest fourth, and trace of such anteriorly, over lowest fifth;

left—inflammatory changes over lowest third, above condyles.

Tibiæ: left—moderate inflammatory changes over shaft.

Sternum: entire bone shows irregular hyperplasia of anterior surface, and thickening.

Clavicles: right—shaft shows thickening and inflammatory changes.

[1] Healthy: skull, both humeri, both radii, both ulnæ, both femora, both tibiæ, both clavicles, sacrum and parts of pelvic bones, left patella, both calcanea.

[2] Healthy: skull, both humeri, both radii, both ulnæ, left tibia, left clavicle, sacrum, both patellæ, left os calcis.

[3] Healthy: left humerus, right patella.

[4] Healthy: both humeri, left ulna, right tibia, right fibula, left clavicle, pelvis, vertebræ, right patella, left os calcis.

255.124.[1]

Skull: The meatus auditorius on each side narrowed by a hyperostotic ridge rising from what was once the posterior free extremity of the tympanic ring (= *tr* exostosis).

Femora: left—inflammatory changes on posterior surface, lowest fourth, also next to external lip of linea aspera at middle.

Tibiæ: right, slight; left, considerable inflammatory changes over shaft.

Fibulæ: left—slight inflammatory changes over shaft.

Clavicles: right—old fracture in middle.

Vertebræ: fourth and fifth lumbar show marginal exostoses.

Os calcis: right—some inflammatory changes over surface.

Phalanges: of body. Several of hands show inflammatory changes.

255.125.[2]

Femora: right—moderate inflammatory changes posteriorly above internal condyles.

255.126.[3]

255.127.[4]

Skull: A limited area of increased porosity on the postero-superior portion of each parietal, above the lambdoid suture.

255.128.[5]

255.131.[6]

Tibiæ: right—inflammatory changes above popliteal ridge.

255.132.[7]

255.133a.[8]

255.134.[9]

255.135.[10]

255.136.[11]

Tibiæ: in both traces of inflammatory changes on surface of shaft.

255.138.[12]

Astragalus: left—the whole upper articular surface, top and sides, changed through disease—flattened, rough, and irregular (Fig. 9, g).

[1] Healthy; right humerus, left radius, left ulna, right femur, right fibula, left clavicle, sternum, right innominate, left patella, left os calcis.

[2] Healthy: skull, left humerus, left radius, left ulna, left femur, right innominate, left os calcis.

[3] Healthy: skull, both humeri, both radii, right ulna, both femora, right tibia, both clavicles, pelvis, vertebræ, right os calcis.

[4] Healthy: both humeri, both femora, left tibia, pelvis, vertebræ.

[5] Healthy: skull, both femora, both tibiæ, left patella.

[6] Healthy: both femora, left tibia, both calcanea.

[7] Healthy: both humeri, both ulnæ, both femora, right tibia, both clavicles, right patella.

[8] Healthy: both femora.

[9] Healthy: both humeri, right radius, both femora, both tibiæ, both clavicles, vertebræ, both calcanea.

[10] Healthy: both humeri, left radius, left ulna.

[11] Healthy: left femur, left fibula, right os calcis.

[12] Healthy: both humeri, left radius, both ulnæ, both femora, both tibiæ, both clavicles, vertebræ, right patella, right os calcis.

255.138a.

Tibiæ: left—synostosis (without previous fracture or other visible injury of either bone) with fibula by one strong bony septum, 6.5 cm. long, and another small one, slightly lower, 2.5 cm. above lower articular surface.

255.139.[1]

255.140.[2]

Tibiæ: right—inflammatory changes above popliteal ridge.

Bones of the foot: on right the first metatarsal, internal and middle cuneiform, and scaphoid, are fused into one mass, apparently since early stage of growth (Fig. 7, d).

255.141.[3]

Sternum: arthritic condition of articular surfaces of first rib.

Vertebræ: fourth lumbar shows moderate marginal exostoses.

Os calcis: left—region of attachment of ext. brevis digitorum muscle rough and porous.

255.142.[4]

255.145.[5]

255.149.[6]

255.150.[7]

255.152.[8]

ARKANSAS.

Females.

2.55120.[9]

Femora: left—smooth bony swelling, 1.2 cm. long by 0.7 cm. broad and 0.3 cm. high, internally, slightly below middle.

Vertebræ: all lumbar show marginal exostoses.

255.122.[10]

Scaphoid: suppurative depression on articular surface for internal cuneiform near distal edge.

255.129.[11]

Vertebræ: cervical—fourth and fifth show marginal exostoses and roughening of lateral articular surfaces;

lumbar—marginal exostoses, and in last three also excrescences about lateral articular surfaces.

[1] Healthy: both femora, both tibiæ.

[2] Healthy: left tibia, left fibula, left patella, both calcanea.

[3] Healthy: skull, both humeri, both radii, both ulnæ, both femora, both tibiæ, both clavicles, both patellæ (right anomalous. See Fig. 9, d), right os calcis.

[4] Healthy: right patella, both calcanea.

[5] Healthy: skull.

[6] Healthy: skull.

[7] Healthy: skull.

[8] Healthy: skull.

[9] Healthy: skull, both humeri, both radii, right femur, both tibiæ, left fibula, pelvis, right patella, both calcanea.

[10] Healthy: skull, both humeri, right femur, left tibia, left fibula, both clavicles, two vertebræ, right patella, both calcanea.

[11] Healthy: skull, both humeri, both ulnæ, both femora, both clavicles, pelvis, right os calcis.

255.130.[1]

Vertebræ: fourth lumbar diseased in posterior third of upper surface of body; nature of pathological condition (?) (Fig. 9, e).

255.133.[2]

Tibiæ: right—slight inflammatory changes on internal surface, above middle.

255.137.[3]

255.143.[4]

Vertebræ: lumbar show marginal exostoses (moderate).

255.144.

Skull: A shallow depression, 3.0 by 4.5 cm., in the left parietal, near the lambdoid and reaching to the sagittal suture.

255.146.[5]

255.147.[6]

255.148.[7]

255.151.

Skull: All bones, vault and face, thickened, but no irregularities or scars.

LOUISIANA.

Males.

255.099.[8]

255.100.[9]

255.100a.[10]

255.102.[11]

255.102a.[12]

255.104.[13]

Vertebræ: lumbar—slight marginal exostoses; lateral articular facets show arthritic changes.

255.106.[14]

Tibiæ: right—effects of suppurative condition anteriorly, on lower end.

255.107.[15]

Vertebræ: lumbar—marginal exostoses; lateral articular facets of one show arthritic changes.

[1] Healthy: skull, both humeri, right radius, right ulna, both femora, both tibiæ, pelvis, right patella, right os calcis.

[2] Healthy: left humerus, left radius, both femora, left tibia.

[3] Healthy: both femora, both tibiæ.

[4] Healthy: skull, both humeri, left radius, both femora, right clavicle.

[5] Healthy: skull, four vertebræ.

[6] Healthy: skull, two vertebræ.

[7] Healthy: skull.

[8] Healthy: both humeri, right radius, right femur, both clavicles.

[9] Healthy: both humeri, right tibia, right fibula.

[10] Healthy: left fibula.

[11] Healthy: skull, both humeri, left radius, both ulnæ, both femora, both clavicles, two vertebræ.

[12] Healthy: right ulna, right femur, right clavicle.

[13] Healthy: skull, both humeri, both tibiæ, nine vertebræ.

[14] Healthy: skull, both humeri, left radius, left ulna, both femora, left tibia, left fibula, right clavicle, pelvis, sixteen vertebræ.

[15] Healthy: skull, right humerus, right radius, right ulna, six vertebræ.

255.109.[1]

Vertebræ: lumbar—slight upper marginal exostoses.

255.110.[2]

255.111.[3]

Tibiæ: left—inflammatory changes about the middle fourth of internal border.

Vertebræ: fifth, sixth, and seventh cervical, twelfth dorsal, show arthritic changes, and all lumbar vertebræ have marginal exostoses.

255.114.[4]

255.115.

Skull: tr exostoses in both meatus auditorii, nearly occluding the right.

255.154.[5]

255.201.[6]

Femora: right—a small exostosis from anterior surface of great trochanter; left—moderate marginal exostoses about lower articular surface.

Vertebræ: lumbar—marginal exostoses.

Os calcis: right—an exostosis, or a fusion of a separate small bone, in front of the insertion of the external brevis digitorum.

Patellæ: left—marginal exostoses and an arthritic spot (Fig. 9, b).

255.203.[7]

255.204.[8]

255.205.[9]

Tibiæ: .205 (3), left—moderate swelling about internal border at middle and lower third;

.205 (4) left—slight inflammatory changes on upper fourth of shaft;

.205 (5) left—inflammatory changes over most of shaft;

.205 (6) right—moderate inflammatory changes on internal surface, below middle.

255.209.[10]

Vertebræ: last dorsal and all lumbar show marginal exostoses.

Os calcis: left—moderate lesion just posterior to anterior astragalus facet (nature?).

[1] Healthy: left humerus, left radius, both ulnæ, both femora, both tibiæ, both fibulæ, eight vertebræ, both patellæ.

[2] Healthy: right radius, right ulna, both femora, both tibiæ, both fibulæ, pelvis, six vertebræ, both patellæ.

[3] Healthy: skull, both humeri, right tibiæ, both clavicles, pelvis, fourteen vertebræ, both patellæ.

[4] Healthy: skull.

[5] Healthy: skull.

[6] Healthy: skull, both humeri, both radii, both ulnæ, both tibiæ, both fibulæ, pelvis, nineteen vertebræ, left os calcis, right patella.

[7] Healthy: skull, three cervical vertebræ.

[8] Healthy: skull, four cervical vertebræ.

[9] Healthy: eight humeri, five radii, four ulnæ, twelve femora, seven tibiæ, two fibulæ, two clavicles, one pelvis.

[10] Healthy: skull, both humeri, right radius, right ulna, both femora, both tibiæ, both fibulæ, both clavicles, pelvis, eighteen vertebræ, right os calcis.

255 210.[1]

Vertebræ: lumbar—marginal exostoses.

255.211.[2]

Vertebræ: cervical—fifth, sixth, and seventh show arthritic changes; lumbar—marginal exostoses and arthritic changes.

255.215.[3]

Vertebræ: cervical—third, fourth, and fifth with arthritic changes; lumbar—fifth with arthritic changes.

Patellæ: left—arthritic changes on articular surface.

255.217.[4]

Femora: in both slight inflammatory changes externally above outer condyle.

Vertebræ: cervical—all below atlas show arthritic changes (roughening, increased porosity, and irregular enlargement of most lateral and also body articular surfaces); dorsal—arthritic changes on first and second; lumbar—marginal exostoses.

Patellæ: right—articular surface shows arthritic changes.

255.218.[5]

Tibiæ: on both slight inflammatory changes over shaft.

Vertebræ: lumbar—one (the only one present) shows marginal exostoses.

255.221.[6]

255.222.[7]

Vertebræ: cervical—arthritic changes on body and articular surfaces, fourth to seventh; dorsal—marginal exostoses on two lowest.

255.223.[8]

Tibiæ: left—a sharp exostosis of moderate size below external tuberosity, at about the insertion of flexor communis.

255.224.[9]

[1] Healthy: skull, both humeri, both radii, both ulnæ, both femora, both tibiæ, both fibulæ, right clavicle, pelvis, twelve vertebræ, left patella.

[2] Healthy: skull, both humeri, both radii, both ulnæ, both femora, both tibiæ, both fibulæ, both clavicles, eleven vertebræ, left patella.

[3] Healthy: skull, both humeri, both radii, both ulnæ, left femur, left tibia, both fibulæ, right clavicle, pelvis, seventeen vertebræ (seventh cervical anomalous; see Fig. 9, a).

[4] Healthy: skull, both humeri, left radius, both ulnæ, right tibia, right fibula, sacrum (anomalous articulation with fifth lumbar; see Fig. 8), ten vertebræ.

[5] Healthy: skull, both humeri, both radii, both ulnæ, both femora, both clavicles, fifteen vertebræ, left patella.

[6] Healthy: both humeri, left radius, both ulnæ, both femora, both tibiæ, both fibulæ, both clavicles, sacrum, twenty-one vertebræ, right patella.

[7] Healthy: both humeri, both radii, both ulnæ, both femora, both tibiæ, both clavicles, one cervical and four dorsal vertebræ.

[8] Healthy: both ulnæ, both femora, right tibia, both patellæ.

[9] Healthy: both humeri, both radii, both ulnæ, both femora, both tibiæ, right clavicle, pelvis.

LOUISIANA.

Females.

255.094.[1]

Skull: Surface of frontal bone irregular over middle, approaching low-nodular.

Humeri: both show advanced inflammatory changes; surface irregular.

Radii: both present inflammatory changes.

Ulnæ: right—probably an old fracture above lowest third; left—inflammatory changes over shaft.

Clavicles: both show inflammatory changes on shaft.

Vertebræ: cervical—atlas, axis, and fourth show arthritic changes, with some marginal exostoses; lumbar (two present)—marginal exostoses.

255.095.[2]

Vertebræ: lumbar—third, fourth and fifth with marginal exostoses.

255.096.[3]

Ulnæ: right—fracture above lowest third, non-union, irregular articulation.

Tibiæ: right—some inflammatory changes over surface of middle third.

Vertebræ: dorsal—slight marginal exostoses on twelfth; lumbar—marginal exostoses on all.

Astragalus: right shows results of healed suppurative condition about head (Fig. 9, f).

255.097.[4]

Radii: right—fracture at middle.

Ulnæ: right—fracture below middle third.

Vertebræ: marginal exostoses on eleventh dorsal, and second, third and fourth lumbar.

255.098.[5]

Radii: right—fracture above lowest fourth.

255.103.[6]

Vertebræ: marginal exostoses on lumbar, and bodies of all these moderately and irregularly flattened.

Scaphoid: right shows slightly incomplete old fusion with internal cuneiform.

[1] Healthy: four vertebræ.

[2] Healthy: skull, left humerus, both radii, both ulnæ, right fibula, right clavicle, seventeen vertebræ.

[3] Healthy: both humeri, right radius, both femora, left tibia, both clavicles, pelvis, five vertebræ.

[4] Healthy: both humeri, left ulna, both femora, both tibiæ, both fibulæ, one dorsal vertebra and one lumbar vertebra, left patella.

[5] Healthy: both humeri, both femora, right fibula, left patella.

[6] Healthy: skull, both humeri, right radius, both femora, both tibiæ, both fibulæ, both clavicles, sacrum, nine vertebræ.

255.105.[1]

Tibiæ: in both, pathological curvature backward at middle, and inflammatory changes over middle third.

Fibulæ: left—inflammatory changes over shaft.

Vertebræ: several lower dorsal and one (the only one present) lumbar show marginal exostoses.

255.108.[2]

Humeri: left—moderate exostosis a short distance posteriorly to lower third of deltoid ridge.

255.112.[3]

Clavicles: left—arthritic changes, sternal end.

Vertebræ: cervical—slight roughening of articular surfaces of bodies of third to seventh;

dorsal—marginal exostoses on several lower ones;

lumbar—slight to moderate upper marginal exostoses on all.

255.113.[4]

Skull: A large patch of irregular, scarry, hardened surface on postero-superior part of right parietal.

255.116.[5]

255.117.[6]

255.118.[7]

255.202.[8]

Skull: A small superficial scar in middle of forehead.

255.205.[9]

Radii: A pair, .205 III, show inflammatory changes over shaft.

Ulnæ: A pair, probably from same skeleton as above radii, show inflammatory changes over shaft.

Femora: A pair, probably from same skeleton as above ulnæ and radii, with inflammatory changes over surface of lowest third of shaft.

Tibiæ: A pair, showing, especially the right, an abnormal curvature backward and somewhat inward at middle, and inflammatory changes over most of the surface. Belongs probably to the same skeleton as the above.

Fibulæ: right—shaft shows inflammatory changes; probably of the same skeleton as the above.

[1] Healthy: skull, both radii, right ulna, both femora, pelvis, eight vertebræ.
[2] Healthy: right humerus, both radii, left femur.
[3] Healthy: skull, right humerus, both radii, both ulnæ, both femora, six vertebræ.
[4] Healthy; three cervical vertebræ.
[5] Healthy; skull.
[6] Healthy: skull, two cervical vertebræ.
[7] Healthy: skull.
[8] Healthy: six cervical vertebræ.
[9] Healthy: seven humeri, four radii, one ulna, five femora, four clavicles.

255.207.[1]

Femora : left—an exostosis, 1.2 cm. long and 0.7 cm. high, scale-like, pointing mediad, just below minor trochanter.

255.208.[2]

255.212.[3]

Vertebræ : cervical—the lower articular surface of body of fifth and the upper of that of sixth show arthritic changes;
lumbar—marginal exostoses on fifth.

255.213.[4]

Femora : left—a hardened oblong swelling, of moderate size, on external border above middle.

Sacrum : moderate marginal exostoses along free border of body of the first segment.

Vertebræ : cervical—left corresponding lateral articular facets of axis and third, and articular surfaces of body of fourth, show arthritic changes;
lumbar—marginal exostoses.

255.214.[5]

Vertebræ : lumbar—slight marginal exostoses on third, fourth, and fifth.

255.216.[6]

Femora : both show moderate diffuse inflammatory changes over surface of shaft.

Tibiæ : right—slight inflammatory changes over shaft;
left—slight inflammatory changes about popliteal ridge and over shaft.

Vertebræ : lumbar—marginal exostoses on fourth and fifth.

255.219.[7]

Tibiæ : in both, but especially in right, some inflammatory changes over shaft.

Vertebræ : lumbar—marginal exostoses on third, fourth, and fifth.

Patellæ : left—arthritic changes on articular surface.

255.220.[8]

Vertebræ : lumbar—one (two present) shows marginal exostoses.

[1] Healthy: skull, both humeri, both radii, both ulnæ, right femur, both tibiæ, both clavicles, four cervical vertebræ, right patella.

[2] Healthy: skull.

[3] Healthy: skull, both humeri, right radius, both ulnæ, both femora, both tibiæ, both fibulæ, both clavicles, sacrum, nineteen vertebræ (first dorsal anomalous; see Fig. 9, b), right patella.

[4] Healthy: skull, both humeri, both radii, both ulnæ, right femur, both tibiæ, left fibula, left clavicle, left os innominatum, twelve vertebræ, both patellæ.

[5] Healthy: skull, left humerus, left radius, both ulnæ, both femora, left clavicle, pelvis, twelve vertebræ, both patellæ.

[6] Healthy: skull, both humeri, both radii, both ulnæ, both clavicles, pelvis, nine vertebræ.

[7] Healthy: skull, both humeri, both radii, both ulnæ, both femora, right fibula, both clavicles, eleven vertebræ.

[8] Healthy: skull, right humerus, both radii, both ulnæ, both femora, both tibiæ, left fibula, both clavicles, nine vertebræ, both patellæ.

255.225.[1]

Vertebræ : dorsal—slight marginal exostoses on several lower ones; lumbar—slight upper marginal exostoses on all.

255.226.[2]

Vertebræ : lumbar—marginal exostoses.

255.227.[3]

Ulnæ : left—inflammatory changes over shaft.

Tibiæ : right—considerable inflammatory changes over shaft.

BONES EXHIBITING PATHOLOGICAL CONDITIONS: RÉSUMÉ*

	Total number of specimens, from both States	Healthy	Inflammatory changes in	Marginal exostoses in	Arthritic changes on articular surfaces in	Fractures in	Exostoses other than marginal in	Abnormal curvatures in	Various in
Skulls †	58	49	6			—	2		1
Humeri	115	113	2	—	—	—	—	—	—
Radii	90	84	4	—	—	2	—	—	—
Ulnæ	86	80	3	—	—	3	—	—	—
Femora	122	105	15	1	—	—	1	—	—
Tibiæ	97	67	28	—	—	—	1	2	1
Fibulæ	47	44	3	—	—	—	—	—	—
Clavicles	70	64	4	—	1	1	—	—	—
Sterna	11 bodies and 7 manubria	10 bodies and 5 manubria	1 body		2 manubria	—	—		—
Scapulæ	3	3							
Pelves	15	15							
Ossa innominata	3	3							
Sacra	9	8	—	1	—	—	—		—
Vertebræ : cervical	182, from 46 individuals	144	—	38, from 12 individuals (mainly arthritic changes)		—	—		—
" dorsal	380, from 48 individuals	362	—	18, from 9 individuals (mainly marginal exostoses)		—	—		Body asymmetric in numerous specimens
" lumbar	194, from 45 individuals	87	—	106, from 33 individuals (almost wholly marginal exostoses)		—	—		1
Patellæ	49	45	—	1	3	—	—		—
Calcanea	70	65	—	—	1	—	—		4
Other tarsal bones	97	90	—	—	3	—	—		4
Metatarsals and Phalanges	9	5	3 (1 individual)	—	—	—	—		3

* With these should be borne in mind the specimens now in the United States Army Medical Museum, so far as the latter pertain to the skeletons under consideration. They are: two femora of a female subject, No. 255.225, from Ward Place, Louisiana, showing bilateral upper congenital dislocation; right femur and tibia, from subject 255.215, same locality, with signs of osteoarthritis; two stray right tibiæ from Boytt's Field, Arkansas, and Bray's Landing, Louisiana, with inflammatory changes on shaft; and the fractured radius and ulna from the left forearm of subject No. 255 100, Bell Gin Landing, Arkansas.

† Exclusive of pathological conditions due to the teeth.

[1] Healthy: both humeri, left ulna, both fibulæ, seven vertebræ, right patella.

[2] Healthy: both humeri, both radii, both ulnæ, both femora, left tibia, pelvis, nineteen vertebræ, left patella.

[3] Healthy: right humerus, right radius, right ulna, both femora, seven vertebræ, both patellæ.

NOTES.

"*Inflammatory Changes.*"—Under this heading are included pathological changes which first affect limited areas of the surface of the shaft, or body of the bone, and in more advanced cases cover most or all of the surface of the shaft, or body of the bone and involve more or less its walls. In the earlier stages the changes are apparently due to slow inflammatory conditions originating in the periosteum and accompanied by more or less perceptible osteophytic deposits. Later, as the inflammatory process progresses, the surface of the shaft becomes more or less irregular and nodular, and the pathological alteration extends to the interstitial parts of the bone, causing considerable thickening, with increase in weight of the shaft of the bone. It affects most often the tibiæ; the vertebræ and pelvic bones appear to be immune. In all probability this process indicates syphilis; but there are instances in which it is impossible to decide whether the changes should be ascribed to this disease or to that systemic condition which results in arthritic changes in various articulations. In the majority of the cases in which such inflammatory changes have occurred in one or more bones of an individual, the skull has been found normal.

"*Marginal Exostoses.*"—These are characteristic excrescences of a definite though as yet somewhat obscure significance, occurring with great frequency, indeed quite generally, in older subjects, both among whites and among the Indians. These excrescences may form about the articular surface of long bones, but are most common about the surfaces of the bodies of the lumbar vertebræ. They begin along the upper margin of the last three lumbars, then appear along the upper margins of the two superior vertebræ of that region and possibly along those of one or two of the last dorsals, and then develop along the lower borders of the same bones. They frequently involve the free border of the uppermost segment of the sacrum, and occasionally accompany arthritic changes in cervical or other lateral articulations. On the whole they bear close etiological relation with the systemic condition that results in osteoarthritis. In advanced stages these marginal exostoses are always accompanied with roughening and other inflammatory changes of the articular surface about which they occur, and in the end the result is a fusion of the adjacent vertebræ. In extreme cases whole regions of the spine, and even the entire spine, as well as the pelvic bones, become consolidated through this change. The beginnings of the condition may be observed in middle-aged adults, but it is especially a feature accompanying old age. It may coexist with other slow inflammatory conditions of the bones, in which case a diagnostic separation of the processes may be very difficult.

"*Arthritic Changes on Articular Surfaces.*"—These changes begin generally in augmented porosity of the articular surface, followed by increased roughness and irregularity of the same. They are most commonly observed on the lateral articular surfaces of the cervical vertebræ, but are occasionally seen on those of the upper dorsal or some of the lumbar vertebræ, on the sacro-iliac surfaces, and even on the articular facets of the long and other bones. As above mentioned, these changes

occur also on the superior and inferior surfaces of the bodies of the vertebræ. They generally involve both of the articular surfaces in apposition, and in the vertebral column lead ultimately to anchyloses. They are frequently accompanied by marginal exostoses along the border of the affected articulations. The two processes, in fact, are closely related and probably are due to the same general causes.

"*Fractures.*"—The fractures observed in this collection are comparatively few, fewer than would be found in a similar number of bones of modern whites. It is further noteworthy that all but one of the fractures are in the bones of the forearm, the exception being one in a clavicle. There is no fracture of the bones of the lower extremities. The healing, barring the case in which union did not take place (Fig. 7, a), is of good character in all the specimens, though attended with more or less marked effects of original displacement of the fragments (see Fig. 6).

"*Exostoses other than Marginal.*"—The majority of exostoses pertaining to this class are formed at the insertion of muscles, or on ridges, such as the popliteal, or within the intermuscular septa. Some of them doubtless stand in causal relation with the marginal exostoses and arthritic changes. Others, particularly those in the intermuscular septa, are manifestations *sui generis*, the cause of which, particularly in young subjects, is not clearly understood. In the series of bones under consideration, the exostoses other than marginal are few, and, with one exception, unimportant. The exception applies to the bony septum found to connect, without sign of injury or disease, the left tibia and the fibula of male skeleton No. 255.138 *a* from Arkansas (Fig. 5).

"*Abnormal Curvatures.*"—Curvatures slightly to moderately above the average, but without reaching a degree which can be considered pathological, are common in the femora of this collection, and also in some of the bones of the forearm. In the femora such curvatures are generally noticeable at or about the middle of the shaft, the upper part of the bone being bent backward, and are usually compensated for by an especially high posterior femoral ridge (linea aspera). Specimens of the so-called "pilasteric femur" generally indicate cases of this nature. In two instances only do curvatures occur which can be regarded as pathological. They are both in the tibia, and may be due to a mild degree of rachitis, although there are no signs of this disease on the remaining parts of the skeletons.

"*Various.*"—The only subject requiring particular mention under this heading is the frequently observed asymmetry of the bodies of the dorsal vertebræ. This unevenness relates only to the contour of the bodies, not to their vertical dimensions. In no case is the particular cause discernible.

FIG. 1.—Non-deformed crania from Arkansas: *a*, *b*, and *c* = No. 255.119; *d* = No. 255.149.

FIG. 2.—On left, two views of non-deformed male skull, 255.126, Arkansas. On right, female skull, 255.094, Louisiana, showing senile parietal depressions above the temporal ridges.

FIG. 3.—*a*, *b*, and *c* = non-deformed female skull, 255.095, Louisiana; *d* = male skull, 255.210, Louisiana, showing moderate fronto-occipital compression.

Fig. 4.—x = male skull, 255.115, Louisiana, showing intraauricular exostosis, and also a well-marked supraauricular fossa (another seen on Fig. 3, d); y = male skull, 255.106, Louisiana, showing lateral fissures in the basilar process.

FIG. 5.—255.108, Louisiana, left female humerus, showing a peculiar exostosis at *e*; 255.138*a*, Arkansas, left male tibia and fibula, showing a synostosis by means of two exostoses

Fig. 6.—Bones showing healed fractures.

FIG. 7.—*a*.—Right ulna, from female skeleton 255.096, Louisiana, showing lack of union after fracture; the two segments form an irregular articulation.

b.—From male skeleton 255.121, Arkansas, showing old fusion of the metatarsal of the right second toe and middle cuneiform.

c.—Specimen from same skeleton as *b*; shows old, slightly incomplete fusion of os calcis and astragalus.

d.—From male skeleton 255.140, Arkansas, showing old fusion of right first metatarsal with internal and middle cuneiform and scaphoid.

Fig. 8.—Sacrum and fifth lumbar vertebra from male skeleton 255.217, Louisiana, showing, on right, overgrowth of the lateral mass of the sacrum and its irregular, as well as partly arthritic, articulation with the also enlarged lateral process of the last lumbar vertebra ("partial assimilation of the last lumbar").

FIG. 9.—*a.*—Seventh cervical of male skeleton 255.215, Louisiana, showing a defect of fusion of the two parts that compose the spinous process.

b.—Peculiar anomaly of the first dorsal of female skeleton 255.212, Louisiana; there are two well-developed articular facets for ribs.

c.—Fourth lumbar of female skeleton 255.219, Louisiana, with a separation of the posterior part of the neural arch; the articular surfaces between the pedicles and laminæ are very rough and irregular.

d.—Right patella of male skeleton 255.141, Arkansas, showing a large vastus externus notch.

e.—Fourth lumbar of female skeleton 255.130, Arkansas, showing diseased condition of upper articular surface of the body.

f.—Right astragalus of female skeleton 255.096, Louisiana, showing results of a healed suppurative condition about the head.

g.—Left astragalus of male skeleton 255.138, Arkansas, showing results of disease.

h.—Left patella of male skeleton 255.201, Louisiana, showing marginal exostoses and arthritic spot on the articular surface.

i.—Right scaphoid and internal cuneiform of female skeleton 255.103, Louisiana, showing an old, nearly complete, fusion.

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November, 1909.

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Certain Sand Mounds of Duval County, Florida; Two Mounds on Murphy Island, Florida; Certain Sand Mounds of the Ocklawaha River, Florida. Journ. Acad. Nat. Sci. of Phila., 1895. Vol. X. Quarto, 108 pages. Frontispiece, maps, plates, illustrations in text.

Additional Mounds of Duval and of Clay Counties, Florida; Mound Investigation on the East Coast of Florida; Certain Florida Coast Mounds north of the St. Johns River. Privately printed, Philadelphia, 1896. Quarto, 30 pages. Map, plates, illustrations in text.

Certain Aboriginal Mounds of the Georgia Coast. Journ. Acad. Nat. Sci. of Phila., 1897. Vol. XI. Quarto, 144 pages. Frontispiece, map, plates, illustrations in text.

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Certain Aboriginal Remains of the Northwest Florida Coast, Part II. Journ. Acad. Nat. Sci. of Phila., 1902. Vol. XII. Quarto, 235 pages. Maps, illustrations in text.

Certain Aboriginal Mounds of the Central Florida West-Coast; Certain Aboriginal Mounds of the Apalachicola River. Journ. Acad. Nat. Sci. of Phila., 1903. Vol. XII. Quarto, 136 pages. Maps, illustrations in text.

Sheet-copper from the Mounds is not Necessarily of European Origin. American Anthropologist. Jan.—March, 1903. Plates in text.

The So-called "Hoe-shaped Implement." American Anthropologist, July-Sept., 1903. Illustrations in text.

Aboriginal Urn-burial in the United States. American Anthropologist, Oct.-Dec., 1904. Plate.

A Form of Urn-burial on Mobile Bay. American Anthropologist, Jan.-March, 1905.

Certain Aboriginal Remains of the Black Warrior River [Moundville]; Certain Aboriginal Remains of the Lower Tombigbee River; Certain Aboriginal Remains of Mobile Bay and Mississippi Sound; Miscellaneous Investigation in Florida. Journ. Acad. Nat. Sci. of Phila., 1905. Vol. XIII. Quarto, 206 pages. Maps, illustrations in text.

Moundville Revisited; Crystal River Revisited; Mounds of the Lower Chattahoochee and Lower Flint Rivers; Notes on the Ten Thousand Islands, Florida. Journ. Acad. Nat. Sci. of Phila., 1907. Vol. XIII. Quarto, 144 pages. Maps, illustrations in text.

Certain Mounds of Arkansas and of Mississippi (including Doctor Hrdlička's paper on the Crania). Journ. Acad. Nat. Sci. of Phila., 1908. Vol. XIII. Quarto, about 128 pages. Maps, illustrations in text, eight colored plates.

Antiquities of the Ouachita Valley. Journ. Acad. Nat. Sci. of Phila., 1909. Vol. XIV. Quarto, 170 pages. Maps, illustrations in text, eight colored plates. (In addition in this number is Doctor Hrdlička's paper on the skeletal remains.)

Antiquities of the St. Francis, White, and Black Rivers. Journ. Acad. Nat. Sci. of Phila., 1910. Vol. XIV. Quarto, 112 pages. Maps, illustrations in text, twenty colored plates.

Antiquities of the St. Francis, White, and Black Rivers, Arkansas

BY

CLARENCE B. MOORE.

PHILADELPHIA:
1910.

MAP OF PARTS OF THE WHITE, BLACK, CURRENT, ST. FRANCIS AND LITTLE RIVERS

Scale in miles

1910

ANTIQUITIES OF THE ST. FRANCIS, WHITE, AND BLACK RIVERS, ARKANSAS.

By Clarence B. Moore.

INTRODUCTION.

Our last season's field work, all of it in the State of Arkansas, occupied most of the months of November, 1909, and January and April, 1910, and all of February and March, 1910.

The regions covered by us were: St. Francis river to its union with Little river, 172 miles by water,[1] and up the latter stream to Lepanto, 20 miles further; White river to its union with Black river, 265 miles by water; and Black river to its junction with Current river, a distance of 109 miles.

White river is navigable in favorable seasons from the union with Black river to Batesville, Ark., 37 miles by water; but at the time of our visit the state of White river was not such as to permit us to go much farther up it than its union with Black river, nor had our success on White river been such as to tempt us to do so.

As we have explained in former reports, it is our custom each summer to have Mr. J. S. Raybon, captain of the steamer from which our work in the winter is done, who is deeply interested in our investigations and renders efficient aid, visit in advance such territory as we desire to explore, in order to find the exact situation of all mounds and cemeteries in that territory, with the names of their owners, that we may obtain permission in advance to investigate these sites, that later our work may not be impeded. Incidentally, we may say that owners of property throughout the South are, as a rule, most kind in granting us permission to dig, and the Academy here takes the opportunity to express its sincere thanks to the owners of mounds and of cemeteries along the rivers we have mentioned, for the cordial way their property was placed at our disposal. As much of this property is cultivated ground, and as we were present at many places in the planting season, permission for unlimited digging is certainly a considerable favor, and it is so regarded by the Academy.

The territory explored by Captain Raybon in advance of our coming (see map) was St. Francis river to its union with Little river, and Little river to the foot of Big Lake, Ark., 262 miles by water.

[1] All distances on these rivers kindly have been furnished the Academy by Major M. L. Walker, United States Engineer Corps, Little Rock, Ark., to whom the Academy is indebted for many courtesies.

In addition, Captain Raybon explored White river to the mouth of Black river, and Black river to Poplar Bluff, Mo., a distance of 497 miles by water; and also traversed Current river from its union with Black river to Doniphan, Mo., 53 miles by water.

Work on Black river north of its union with Current river, and on Current river, was abandoned by us on account of the scarcity of artifacts with aboriginal burials and of the inferior quality of such artifacts as were found with them in our investigations.

It is not possible to take a boat on St. Francis river above its union with Little river, but the latter stream at the time of our visit was easily navigable to Big Lake. Our quest, however, which ended at Lepanto, on Little river, came to an end owing to the hostility against negroes, entertained by the natives along the river above Lepanto, who maintain a negro dead-line, permitting no colored person to go among them. As this race prejudice has resulted in the murder of a number of negroes, we did not deem it fair to expose to slaughter men who had served us faithfully for years. Our sole motive for referring to this disagreeable episode is that when an amply equipped expedition abandons a most promising region, a valid reason for doing so should be forthcoming.

As we have explained in former reports, our archæological work in the South is done from a stern-wheel steamer one hundred feet in length and twenty feet beam. This steamer is navigated by a captain, a pilot, an engineer, and a crew of five men. In addition, there were with us the last season, six men to dig, who, aided by three of the crew, made a force of nine men in all for this work.

Dr. M. G. Miller, anatomist of the expedition, who has taken part in all our field work and in putting through the press all our reports, aided the investigation this season as usual.

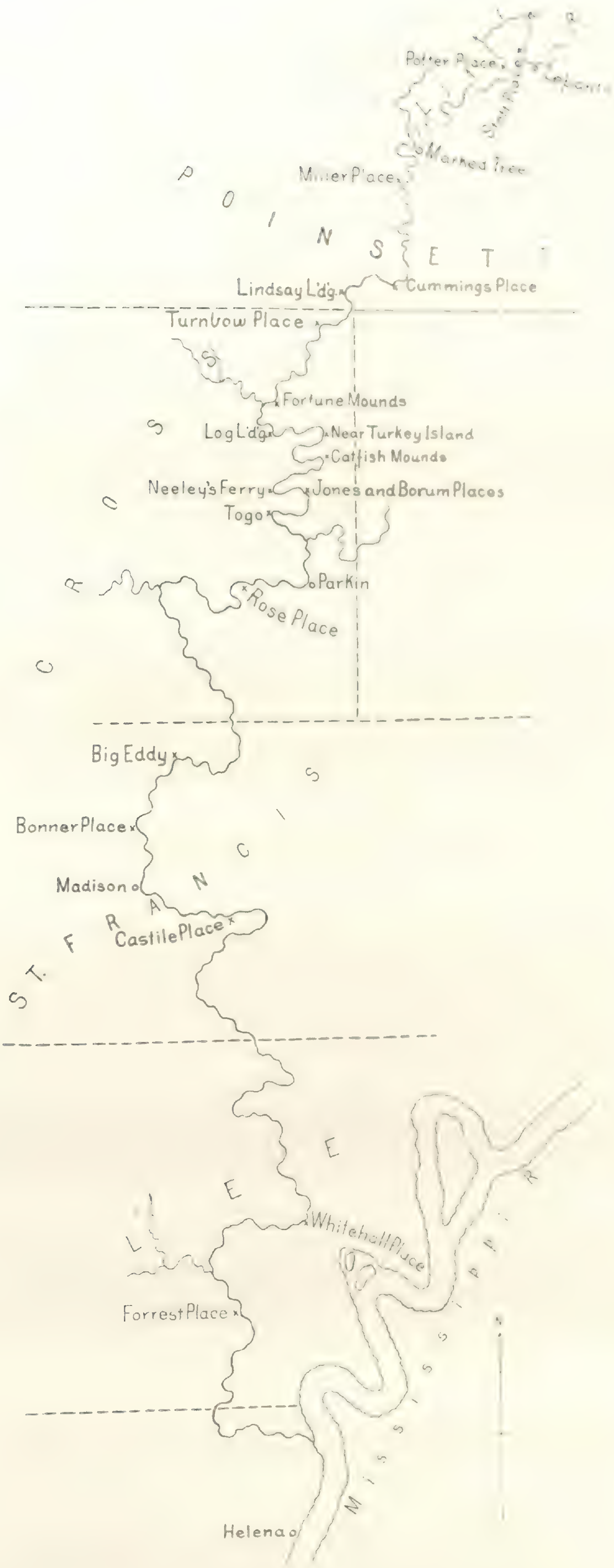
Mr. Arthur W. Clime, with the party for the third year, rendered most efficient aid in a variety of ways.

Our thanks are tendered Prof. F. W. Putnam and Mr. Charles C. Willoughby for much valuable aid in connection with the pottery of the St. Francis river; Prof. F. A. Lucas for identification of bones of lower animals; Dr. H. A. Pilsbry and Mr. E. G. Vanatta for determination of shells; Prof. R. A. F. Penrose, Jr., for identification of minerals and rocks;[1] Dr. H. F. Keller for chemical determinations; Miss H. N. Wardle for valuable suggestions, and aid with the index; and Mr. F. W. Hodge for literary revision of this report.

Throughout our season's work thirty-eight boxes and cases of skulls and of other skeletal remains were carefully preserved by us and were forwarded as a gift to the United States National Museum. These remains, at a later period, will be fully described by Dr. Aleš Hrdlička, Curator of the Division of Physical Anthropology in the National Museum.

All measurements of vessels and of other objects described in this report are approximate, and any reduction in size in the illustrations is linear. The vessels and other objects may be seen at the Academy of Natural Sciences of Philadelphia.

[1] As sections for microscopic examination, cut from the various specimens, were not furnished by us, the basis for exact determination was not so ample as it otherwise would have been.



MAP OF PARTS OF THE ST. FRANCIS AND LITTLE RIVERS

Scale in miles

0 5 10 20

1910

PART I.

St. Francis River.

St. Francis river enters the Mississippi on the western side, about twelve miles above the city of Helena, Ark.

The banks in places are fairly high and are not subject to overflow except on rare occasions. It is not likely that the great aboriginal sites along the river have suffered to any great extent through wash of water.

The principal sites along the St. Francis, although as a rule having mounds in connection with them, are in reality great dwelling-sites which have increased in height gradually through long periods of occupancy, and the aborigines, burying where they lived, have formed, in course of time, great cemeteries in which burials lie at various depths often depending on the period in the growth of the site when the burial was made.

All these burials in the various sites we believe to have been pre-Columbian,[1]

[1] The reader is doubtless aware that native copper (which is not found in merchantable quantities in Europe), such as was used by the aborigines in the United States before the coming of Europeans, is far purer than is copper produced by smelting from the ores found in Europe, which are sulphide ores and contain many impurities that cannot be wholly eliminated in smelting.

Three specimens of copper from burial sites in the St. Francis Valley were submitted to Dr. H. F. Keller, who reports as follows:

"Having completed the chemical examination of the materials you sent me May 21st, I would state my results as follows:

"1. The copper bead marked 'Big Eddy, with burial No. 5' consisted of a piece of foil lapped at one edge and rolled into a cylinder. The crust of carbonate, etc., was removed with acid, and the clean metal carefully analyzed. It yielded—

"Copper 99.91%
"Silver .031
"Iron .023

"Lead, arsenic, antimony, and other metals were absent. There can be no doubt therefore that the bead was made from native copper.

"2. The smaller bead marked 'Mound on Rose Place, Cross County, Arkansas,' after cleaning with acid, was found to contain 99.9% of copper and traces of silver and iron, but no other metallic impurities.

"3. The fragments of copper marked 'Mounds above Turkey Island, Cross Co., Ark., with burial No. 35' were found thickly incrusted with carbonate of copper and clay. This material contains about 80% of copper, but no trace of lead, arsenic, antimony, or other impurities characteristic of copper extracted from sulphide ores could be detected in it. It showed however a very marked reaction for silver.

"4. The 'red paint' from cemetery on Cummings Place, Poinsett Co., Ark., is a clay colored red by an admixture of about 8% oxide of iron.

"5. The earthy material of very bright red color is similar in composition, but contains 13.3% ferric oxide.

"The tests of the specimens of copper were made with the greatest care, and they leave no room for doubt that these objects were fashioned from the native metal."

We learn also by this report that the red pigments in use by the aborigines along the St. Francis were clays colored with red oxide of iron—a purely aboriginal product.

since in no instance in the digging done by us along the St. Francis was any object found in any way indicating intercourse with Europeans. The St. Francis appears to have been peculiarly secluded. Thomas Ashe,[1] who traveled down the Mississippi so late as 1806, says of the St. Francis, "Near its confluence with the Mississippi, it is subject to inundations but toward the head of its navigation it has high and fertile banks, which are thickly occupied by Indian nations, of whom nothing is known, as there are no white settlers among them, and as they have never been visited by any person disposed to discover their character and history."

Aboriginal burials in the St. Francis region usually had been made extended on the back, and, with the exception of pottery, but little had been placed with them, though there were many exceptions to this rule.

Several instances of cremation of human remains were found by us along the river, and there was one instance of cremated human bones deposited in a vessel of earthenware.

The St. Francis valley forms part of the Middle Mississippi region, which region is defined by Holmes[2] as follows:

"The geographic distribution of the ware of this group naturally receives first consideration. Apparently its greatest and most striking development centers about the contiguous portions of Arkansas, Missouri, Illinois, Kentucky and Tennessee."

The aboriginal pottery of this Middle Mississippi region is more abundant than is that of any other part of the United States, and this pottery probably has been more fully described and figured than has the ware from any other portion of our country.

The St. Francis valley has yielded more examples of its ware than has any equal area in the United States, and while this pottery has shared in the full description which has been accorded the earthenware of the region to which it belongs, and while we can hope to shed but little new light upon the pottery itself, we shall try to describe in this report the conditions under which the vessels were placed with the dead and the burial customs of the aborigines who made the vessels, details which former seekers of aboriginal remains along the St. Francis have failed to make public.

As the St. Francis (with the possible exception of the Mississippi, a river very many times the length of the St. Francis) long has had the reputation of being richer in aboriginal earthenware than is any other river in the United States, the territory through which the river passes has been for years the headquarters for collectors and for persons wishing to make a livelihood or to increase their means by the sale of Indian pottery, and these individuals have worked for long periods and with indefatigable zeal. Moreover, vast numbers of vessels have been destroyed along the St. Francis in the process of cultivation of the cemeteries in which they lay, while others have been dug out or have been shattered in the digging by

[1] "Travels in America." London, 1809, p. 273.

[2] William H. Holmes. "Aboriginal Pottery of Eastern United States." 20th An. Rep. Bur. Am. Ethn., p. 80.

unskilled local endeavor. Consequently the limitations of the scientific worker along St. Francis river at the present time are apparent.

Though we were merely gleaners along the St. Francis, so far as the acquisition of pottery there was concerned, and while the number of vessels obtained by us was far smaller than it would have been had the time of our visit been advanced a score of years, yet there seems to be no reason to believe that the average quality of the vessels obtained by us can differ from that of earlier discoveries along the river.

The earthenware is shell-tempered. Quantity rather than quality seems to have been the aim of its makers, for the ware is often insufficiently fired, and the vessels are frequently thick and out of shape—"lop-sided," to use an expression exactly describing them.

The high polish of the surface often found on vessels from Mississippi, Alabama, and Louisiana, is almost absent on the St. Francis.

A very large proportion of the vessels are undecorated or have some trivial form of decoration such as beaded, notched, or scalloped margins, or else loop-handles below the rim or ears projecting from it (if handles and ears, which were used to aid suspension, may be classed as decoration). Superior trailed or incised decoration is almost never seen on the St. Francis pottery, the inferior surface of most of the ware being unsuited to incised decoration of excellent quality, even had it been attempted. When incised decoration is met with on the St. Francis ware, it is as a rule rude and scanty, being confined to parts just below the rim, and usually is restricted to vessels intended for culinary purposes. On the few vessels found by us having incised decoration, it is almost invariably of a kind so elementary in design and execution that the vessels are entirely out-classed in this respect by those found in some other regions. But one really superior piece of incised work was found by us on the whole St. Francis river, and but two or three of even medium quality. This comparative absence of incised decoration on St. Francis pottery is conducive to great monotony in the appearance of its vessels, since very many of them, which would have decoration in other regions, are wholly without it on the St. Francis.

Of course there are some exceptions to the general inferiority of vessels along the river—perhaps about eight per cent.[1] of those found there present other than most minor points of interest as to form or decoration. Vessels of the better class found by us will be fully described and illustrated in this report. As, however, almost none of our vessels are of types wholly new to the pottery of the Middle Mississippi valley region, we feel an explanation to be due for introducing illustrations of them. Many of these vessels present minor points of difference from those which have been figured elsewhere, and illustrations given in some of the earlier works were made at a time when technical methods had not reached the excellence they have attained at present.

[1] Fourteen hundred and fifteen vessels, whole and broken, were found by us on St. Francis river and on the small part of Little river investigated by us. All these vessels were most carefully examined by us before being rejected in place, being given to owners of the lands, being turned over to minor institutions, or reserved for our collection at the Academy of Natural Sciences.

Owing to the widespread attention that the pottery of the St. Francis has received already, we shall omit in the main from our description of the ware the commoner forms of the pottery of this region, and shall have but little to say of the undecorated bottles, pots, and bowls of commonplace form; the bowls and pots with loop-handles or ears, and with trivial decoration, such as knobs, notches, fillets, or rude incised or punctate markings; bowls having rudely modeled heads projecting from one side and conventional tails on the opposite side; many bowls having forms of the fish in profile; bottles with dual necks uniting near the opening or with annular or tripod supports; or bottles having coarse representations of the human head at the opening; vessels bearing in relief representations of the frog; shell forms, fresh-water and marine; various forms of the gourd, including ladles; vessels of ordinary shape with uniform coatings of red pigment.

The great majority of vessels found by us along St. Francis river were in fragments, as indeed we have found the case to be everywhere else. These fragments were carefully gathered and, if found worthy of restoration, were labeled and sent to the Academy of Natural Sciences, where they were cemented together in their original shapes,[1] occasionally with slight restoration. This restoration is never attempted unless it is entirely warranted by the form of the remainder of the vessel, as, for example, the addition of a handle similar to another on the vessel, or the insertion of a portion of the rim or of the body. The restoration, moreover, is made with a material that can be distinguished at once from that of which the vessel is made.

The student of the earthenware of the St. Francis who is not already familiar with that part of Professor Holmes' "Aboriginal Pottery of Eastern United States,"[2] which treats of the ware of the Middle Mississippi valley, is recommended to accord it careful attention, inasmuch as nearly all the forms and decorations of pottery found along the St. Francis, as well as in adjacent territory, are carefully described and figured in it. Also, "An Analysis of the Decorations upon Pottery from the Mississippi Valley"[3] will prove interesting to read in connection with the decoration of vessels figured in this report.

As a general rule the mortuary deposit of pottery along the St. Francis was placed near the head of the skeleton, though there were a number of exceptions to this rule where vessels were found near various parts of the body. In cases of deposits of a considerable number of vessels, the pottery sometimes began at the head and extended downward. In the case of an infant which had eleven vessels with it, the pottery deposit extended almost the full length of the skeleton, if not its entire length. However, in the great majority of cases vessels of earthenware lay at the heads, and "pot-hunters" along the river, having dug down to vessels near skulls, which they had discovered with the aid of sounding-rods, seldom dug out the entire skeletons, realizing that the chance of finding other vessels with them did not warrant their doing so.

[1] The effigy vessel from the Bonner Place, on St. Francis river, was found in ninety-five pieces.
[2] *Op. cit.*
[3] Charles C. Willoughby. Journal of American Folk-lore, Vol. X, 1897.

The position of vessels in respect to each other along the St. Francis was the same as we have found it to be elsewhere. Vessels often lay within other vessels or under them, and bottles were often capped by small, inverted bowls which sometimes, in the case of bottles with short necks, covered the neck completely, the rim of the inverted bowl resting on the body of the bottle.

In many vessels, or occasionally placed on the openings of some of them, were mussel-shells which had served as spoons,[1] and sometimes shells carved to represent spoons were present.

In burial sites along St. Francis and Little rivers were found bones from various animals which Prof. F. A. Lucas kindly has determined as dog, deer, otter, beaver, cottontail rabbit, raccoon, wildcat, and probably elk.

We shall now describe certain sites along St. Francis and Little rivers, taken in order going up-stream, introducing only sites where our search was rewarded, though many others were visited by us and much unproductive work was done in them. We believe we had the privilege of examining all the important sites along the St. Francis except two (some were exhausted years ago), and these two sites, the Clay-Luna Place and the Cook Place, both in Cross County, it is needless to say, were not omitted by us without many strenuous efforts for permission to investigate.

Sites Investigated.

Forrest Place, Lee County.
Whitehall Place, Lee County.
Castile Place, St. Francis County.
Bonner Place, St. Francis County.
Big Eddy, St. Francis County.
Bay Ferry, Cross County.
Rose Mound, Cross County.
Parkin, Cross County.
Togo, Cross County.
Jones and Borum Places, Cross County.
Neeley's Ferry, Cross County.
Catfish Mounds, Cross County.
Mounds above Turkey Island, Cross County.
Log Landing, Cross County.
Fortune Mounds, Cross County.
Turnbow Place, Cross County.
Lindsay Place, Poinsett County.
Cummings Place, Poinsett County.
Miller Place, Poinsett County.
Potter Place, Poinsett County.
Stott Place, Poinsett County.

[1] In this connection it is interesting to note that the Japanese word *kai* stands for both shell and spoon: and that the Chinese ideograph for the word "spoon" is said to have been copied from a shell resembling a pecten. N. Gordon Munro, M. D., "Reflections on some European Palæoliths and Japanese Survivals." Transactions of the Asiatic Society of Japan, Vol. XXXVI, Part III.

Cemetery on the Forrest Place, Lee County.

Going inland from Forrest Place Landing about three-quarters of a mile in a southwesterly course (or considerably more by the winding road), that part of the Forrest Place is reached which belongs to Mr. Stephen Blackstone, of Macomb, Ill.

The surface of the cultivated part of Mr. Blackstone's property is strewn with midden-debris, including numerous small arrowheads of flint[1] and bits of pottery, some of which latter, of thin ware, still are colored a brilliant red.

There is considerable history of the finding of human bones and of pottery vessels all over the Forrest Place, which borders the low hills that there approach the river. Colored tenants showed us two earthenware vessels that had been ploughed up by them, one of which, somewhat broken after its discovery, evidently had been of the "teapot" variety, though the spout was missing when the vessel was recovered by us in the field where it had been left by the discoverer.

This vessel differs somewhat in details from the "teapot" vessel found in regions farther south, in that it has a flat base projecting somewhat, and a neck of the compound form resembling a small cup.

In a part of the field where debris was thickest and where the soil was darkest, considerable digging was done by us, resulting in the discovery of six burials. These burials, however, were so widely separated that the place could hardly be considered a cemetery in the strict sense of the word.

The burials lay in pits, the deepest 3 feet from the surface. The condition of the bones was such that no skulls could be saved, most of the burials, in fact, being hardly more than decaying fragments of bone. Three burials lay closely flexed on the left side, the head of one being bent forward on the chest.

Burial No. 5 lay with the trunk on the back, the thighs flexed upward in a manner to raise the knees considerably above the level of the trunk, the legs flexed closely against the thighs.

Burial No. 6 had the trunk twisted, the lower part being on the back and the upper part on the right side. The thighs were partly flexed and widely everted, while the legs were partly flexed, the feet being together. The head rested on the right shoulder.

One skeleton, that of a child, was badly decayed.

Twelve vessels were found by us in the digging, lying at various parts of the skeletons, never more than two with a burial, though three vessels were found together with no bones in association.

In the soil, apart from human remains, was a pebble of quartzite,[2] flat, nearly round, about 2.2 inches in diameter and .3 inch in thickness, having near the margin a perforation for suspension.

[1] Unless otherwise specified, the term "flint" is used in this report as a general name for the material of objects made of chert, hornstone, chalcedony, opal, and other silicious materials, including the rock known as novaculite, found abundantly in southwestern Arkansas.

[2] Professor R. A. F. Penrose, Jr., who for several years was connected with the Geological Survey of Arkansas, and who kindly determined for us the rocks of which the objects of stone found by us last season are made, writes: "It is evident that most of the implements you showed me might have been made from materials found in Arkansas * * * . The massive shale, the slate, the limestone, the sandstone, the quartzite, the flint, the chert, the quartz and the calcite, from which many of the implements were made, are found abundantly in that State."

Cemeteries on the Whitehall Place, Lee County.

The Whitehall Plantation, one of four kindly placed at our disposal by Messrs. Banks and Harrelson (Lem Banks and W. H. Harrelson), of Memphis, Tenn., is bordered on one side by St. Francis river and on the opposite side by the Mississippi, the rivers at this place not being much more than two miles apart.

About one mile in a NW. direction from Franks Landing on the St. Francis is a mound, 11 feet in height, in a cultivated field belonging to the plantation. The basal outline is irregular, the principal diameters being 105 feet and 125 feet. The summit-plateau is 50 feet by 67 feet. This mound, which has every appearance of having been domiciliary, was dug into by us with negative results in the endeavor to ascertain if superficial burials had been made in the plateau.

Adjacent to the mound is a tract of land said to be above high water at all seasons. In this tract, about 40 yards in a northerly direction from the mound, an earthenware vessel was discovered some distance below the surface by the aid of a sounding-rod, and later, with the help of trial-holes, an area roughly elliptical in outline, 38 feet by 27 feet, was defined as containing burials. This space, rich, alluvial deposit, was practically dug through by us, such parts only being left undug as were too small to contain a burial without discovery.

The burials, twelve in number, lay from 8 inches to 26 inches below the surface. They had suffered through decay to an extent that made preservation impossible. Their positions were as follows:

Partly flexed on the right side (including one adolescent)	4
Partly flexed on the left side	3
Children, position undetermined	3

Burial No. 3 lay with the trunk on the back, the thighs and legs partly flexed to the left side.

Fig. 1.—Pipe of earthenware. With Burial No. 3. Whitehall Place. (Full size.)

Burial No. 12, lying with the trunk on the back, had the knees drawn up toward the chin.

Seven vessels of earthenware came from this little cemetery, six of which were immediately with burials.

Burial No. 3, adult, in addition to a bottle at the left humerus, had, at the left elbow, an interesting pipe of hard, black ware, shown in Fig. 1.

Of the seven vessels from this place, some of which were badly crushed, three were undecorated bottles with wide mouths, and one was an undecorated bowl.

The three remaining vessels merit particular description.

Vessel No. 2, a bottle of yellow ware, decorated with alternate, upright bands of red and cream-colored pigment. The neck of the bottle, the upper part of which is missing, has a uniform coating of red pigment.

Vessel No. 3. This bottle (Fig. 2), rather neatly shaped, has six lobes on the body, each surmounted by a notched band in relief.

FIG. 2.—Vessel No. 3. Whitehall Place. (Height 5.1 inches.)

Vessel No. 1. The vessel shown in Fig. 3 is of a shape somewhat uncommon along St. Francis river, and as the Mississippi is but two miles distant from where the vessel was found, it can hardly be regarded as a St. Francis type. Four heads of frogs in relief adorn the body.

In places on the surface of this plantation were signs of aboriginal occupancy, including a few flint arrowheads, nearly all small and leaf-shaped; numerous fragments of pottery, some of excellent ware bearing well-preserved decoration of red

pigment. A "celt" of volcanic rock, about 6.5 inches in length, was picked up on the surface.

About 35 yards northeasterly from the mound was a small area of sand having a slight admixture of clay, the only soil of this kind we noticed in our search over the higher parts of the plantation bordering the mound. A few small fragments of human bones lay on the surface at this place, which, however, had upon it no midden-debris. Sounding-rods and trial-holes at once came upon burials, and sub-

FIG. 3.—Vessel No. 1. Whitehall Place. (Diam. 8.8 inches.)

sequent digging indicated that the sand deposit, which was about 24 feet square, was crowded with burials extending from the surface to a depth of 4 feet. Nine of these burials removed by us with great care, having in view the preservation of the bones, proved to be closely flexed on the left side in four cases; on the right side in three instances; while two were aboriginal disturbances.

Having ascertained that the condition of the bones was such as to render them unfit for preservation, and having failed to find an artifact of any kind associated with them, we removed in part nine other burials, and finding them almost entirely under conditions similar to those of the burials previously taken out, abandoned the search.

THE CASTILE PLACE, ST. FRANCIS COUNTY.

Just above the landing at the Castile Place, on property belonging to Mr. W. L. McGee, of Grand Junction, Colo., is a quadrangular mound about 300 feet by 350 feet in extent, with the upper surface somewhat rolling. Probably 7.5 feet would be a fair estimate of the average height of the mound.

It was evident from the appearance of the surface that the mound had long been a place of abode, for scattered about was much debris, consisting of bits of flint, fragments of pottery, and small masses of baked clay, which, as the surface of the mound had been under cultivation, probably came from fireplaces broken by the plow. With the fragmentary material on the surface were found several small arrowpoints, a "celt" somewhat broken, and an earthenware pipe of ordinary form.

The mound, which probably had increased in height by stages, was composed of loamy material with a large admixture of ashes and much baked clay in masses, perhaps fireplaces broken through in digging graves—for the aborigines had buried where they lived.

Extensive digging was done by us in this mound, resulting in the discovery of one burial in the southeastern part of it; of two near the northeastern corner; and of twenty-three burials near together in the central part of the western half. In addition, five burials were found, widely apart, in a ridge which forms part of a field to the westward of the mound.

The burials in the mound proper were in graves, from slightly below the surface to a depth of 4 feet. It was impossible to determine if the deeper graves had been made at a period when the mound was of the same height that it was at the time of our visit, as none of them cut through any stratum or fireplace, though probably other of the deeper graves in the mound which were not found by us may do so.

A number of burials had been cut through by later graves. This condition in several instances proved to be unfortunate, as, for example, Burial No. 12 (a well-preserved adult skeleton, the only one the skull of which was in a condition to save), which a later interment had deprived of the bones of the lower limbs.

As a rule, the form of burial was at full length on the back. The exceptions, excluding some burials which had been greatly disturbed, and the remains of several children, were as follows:

Burial No. 5, adult, partly flexed on the left side.

Burial No. 6, adult, the trunk lying on the right side, the lower extremities angling off from it.

Burial No. 14, at full length, face down, the left arm brought up over the head, the forearm closely flexed. A later burial had removed from this skeleton the bones of the legs and feet.

Burial No. 23, adult, trunk on the back, the right lower extremity straight, the left slightly flexed.

Few burials were unaccompanied by objects of any sort, most of them having pottery in association. Incidentally it may be said that several skulls were found crushed by vessels that had been placed against them.

With the exception of pottery, which will be described later, but few objects had been placed with the dead.

Burial No. 3, the remains of an adolescent, which had been somewhat disturbed, had at the right elbow a bottle and, slightly scattered, twelve tubular beads of bone, each about an inch in length.

Burial No. 4, adult, at full length on the back, in addition to one vessel, had, at the side of the right leg, from the knee upward: a "celt" of silicious limestone, about 4 inches in length; three piercing implements of bone, with the articular parts remaining; a number of mussel-shells, decayed and broken; a lot of small, round pebbles, probably from a rattle, the remainder of which had disappeared through decay; the incisor of a beaver, with the root cut off.

Burial No. 6 had in association a section cut from a large and thick mussel-shell (*Quadrula heros*) in a manner to leave part of the valve, projecting like a hook. Though this object has the form of a pendant, it bears neither groove nor perforation. Its position in connection with the body was as follows: near the head of the skeleton was an upright vessel having within it another, also erect; farther down was a single upright vessel, and at the forearm was a bowl on its base, containing a vessel inverted over the shell ornament.

Burial No. 14 had near it an arrowhead wrought from a tine of deer antler which, however, may have been accidentally present in the midden debris. At the skull was an undecorated bottle, and two bowls, one within the other.

Burial No. 16, an adolescent at full length on the back, had, at the head, a single vessel, and near the left humerus a shell of the oyster type (*Exogyra costata*), a cretaceous fossil having a ribbed back, the ribs, however, in this instance, having been removed probably to allow the shell to serve as a spoon.

A single shell bead was found near a burial.

Apart from human remains in the mound were two piercing implements of bone, and a small "celt," seemingly of sedimentary rock; while on the surface of the adjoining field, to which reference has been made, were gathered a number of chisels, some wrought from flint pebbles, some from masses of silicified wood; a few flint arrowheads; a bead of bone; two disks made from fragments of pottery vessels, one with a central perforation, the other about two-thirds perforated centrally.

Sixty-four vessels were found by us at the Castile Place, nearly all associated with burials. As a rule, the pottery lay near the skulls, though there were exceptions to this. At times a single vessel lay with a burial, but more often two were present, usually a bottle and a bowl, sometimes one at each side of the skull. The greatest number of vessels present with one burial was seven, the deposit being arranged in line in the following manner: a large vessel upright, having within it, also upright, a vessel within which was a third vessel inverted over a small one in fragments; a vessel inverted over another one standing erect; a single vessel in an upright position.

Although we have given the number of vessels found by us at the Castile Place as sixty-four, this figure by no means represents the tally of those preserved by us, many of the vessels having been merely disintegrating fragments, while others had considerable parts missing and were in other ways undesirable.

One vessel is superior to the others from this place. This is Vessel No. 37, a bottle 5.5 inches in height, coated exteriorly with red pigment and having traces of the same color within the neck. Modeled in relief on the body of the bottle are the head and legs of a frog.

Mound on the Bonner Place, St. Francis County.

About one-quarter mile inland, in a straight line, through partly cleared ground, from the landing at the upper end of the Bonner Place, belonging to Mr. Edward Bonner, Sr., of Forrest City, Ark., one comes to the house of the tenant occupying that part of the property. Immediately back of the house is the remnant of a mound which has been much reduced in height and increased in diameter by cultivation. The height at the time of our visit was about 3 feet; the diameter, 45 feet.

This mound has a history as an aboriginal burial place, and fragments of human bone were scattered over the surface when we visited it. What we considered to be the original mound was dug out by us, and subsequently refilled, as the high ground was required for the use of stock in periods of high water.

Human remains in the last stage of decay were present in a number of places in the mound, including a large deposit of long-bones piled parallel to one another, having four skulls at the margin of the pile. Possibly other crania in small fragments were included in this deposit.

No artifacts were found immediately with burials, but scattered throughout the mound were several bowls, two small bottles, a human effigy figure, and an earthenware pipe.

The ware of all these is black, almost without shell tempering, and imperfectly fired. In consequence, several of the vessels were in disintegrating bits, and all but one, a bottle, were very badly broken. No ornamentation of any kind was present on the earthenware of this mound.

Vessel No. 4, a human effigy bottle,[1] found in ninety-five fragments, since cemented together (Figs. 4, 5), has an interesting arrangement of the head-dress and the hair, and is represented as wearing a garment resembling an apron. The tongue protrudes, seemingly; or else some object is represented as held in the mouth.

The pipe, of a common type in Arkansas, has two small projecting feet at the base of the bowl, to enable the pipe to remain upright when placed on a level surface. Supports of this kind are sometimes prominent features on these pipes, as they are on the one figured by us as coming from the Rose Mound (Fig. 8). In other cases, however, the supports are less conspicuous, and in some cases are hardly more than rudimentary.

Cemetery near Big Eddy, St. Francis County.

Big Eddy, a bay formed by the swirl of the river in periods of high water, is almost surrounded by woodland sloping upward to low hills that at this place nearly approach the water. The territory for a considerable distance around is owned by Mrs. Mary Lee Dennis, of Hot Springs, Ark., and is under the management of Mr. Robert J. Rhodes, of Whiteville, Tenn.

By following for a short distance the county road leading inland (another road

[1] For many effigy bottles described and figured, see Gen. Gates P. Thruston's "Antiquities of Tennessee," 2d ed.

FIG. 4.—Vessel No. 4. Bonner Place. (Height 13.1 inches.)

FIG. 5.—Vessel No. 4. Side view. Bonner Place.

follows the river), one reaches a mound 55 feet in diameter of base and about 8 feet in height, immediately by the roadside.

This mound, of raw clay, probably the site of the wigwam of the chief, from which the superficial deposit of midden-refuse has washed away, yielded nothing to investigation.

Across the road from the mound begins a low ridge of artificial origin, which, running westwardly, borders a shallow ravine and then turning southwardly is cut by the road and ends a short distance beyond it.

This ridge, the level ground near it, and various small rises of the ground in its vicinity (all of which are still in woodland), as well as a field about 200 yards NE. from the mound, for many years have yielded pottery in amounts really surprising, to the efforts of inhabitants and of seekers of relics for the market, some of whom, it is said, devoted long periods of time to the work. The whole territory is literally seamed with traces of digging, except the field where the superficial evidence of search has been obliterated by the plow.

A most careful examination was accorded by us to all this territory, with the aid of sounding-rods and by digging trial-holes, but so extensive had been the work of previous diggers that nothing except remains left by them was found by us, save two burials in the field, and a group of interments at the beginning of the ridge, just across the road from the mound, most of which were at a depth to defy the efforts of the sounding-rods of previous visitors. Unfortunately for us, both in the field and in the remainder of the cemetery in the woodland, the artificial deposit of loamy material and midden-debris was less deep and had offered every opportunity to the pottery-hunters.

Twenty-four burials which came from the extremity of the ridge, and two additional ones from the field—all that were found by us—will be described in detail, with the general statement in advance that though the bones at this place were in fairly good condition, but one skull was uncrushed, and that neither at this place nor at any other place on the St. Francis was noted any orientation of burials.

Burial No. 1, the skeleton of an adult (as are all not otherwise specified by us), lay extended on the back at a depth of 3 feet 9 inches, the measurement being made to the upper surface of the burial, which is the method practised by us in all our measurements of depths of interments. Above part of this burial, but near the surface, was the site of an aboriginal fireplace, marked by a layer of baked clay having a maximum thickness of 6 inches. This layer also extended over parts of other burials (Nos. 2 and 3). It is not our belief that the fireplace, which was far above the burials, had any connection with them, but we consider it to have been incidental to the dwelling-site. Fragments of burnt clay were present in the soil throughout the entire site.

To return to Burial No. 1: at the neck were three tubular beads of shell; two vessels at the left shoulder; two at the left elbow; and one at the right humerus.

Burial No. 2, at full length on the back, 3 feet 8 inches down. Two vessels lay at the right of the pelvis.

Burial No. 3, extended on the back, 4 feet 6 inches down. Vessels lay one at the left hand; one somewhat farther up; one near the left shoulder. At the right humerus were: a "celt" of silicious limestone; two bone implements with rounded points; a flat flint pebble showing marks of use; a flat mass, probably crystallized sandstone; a fragment of pottery; a decayed bit of bone having belonged to a lower animal, part of which had been cut away; a bead of bone, 1.75 inches in length; four small shell beads.

Burials Nos. 1 and 3 were interestingly associated, showing, as they did, distinctly different periods of interment, Burial No. 3 lying below a stratum of clay which locally formed part of the ridge, while Burial No. 1 had cut through this stratum, so that it is clear that one burial had been made before the formation of the stratum, while the other had been made subsequently (Diagram, Fig. 6).

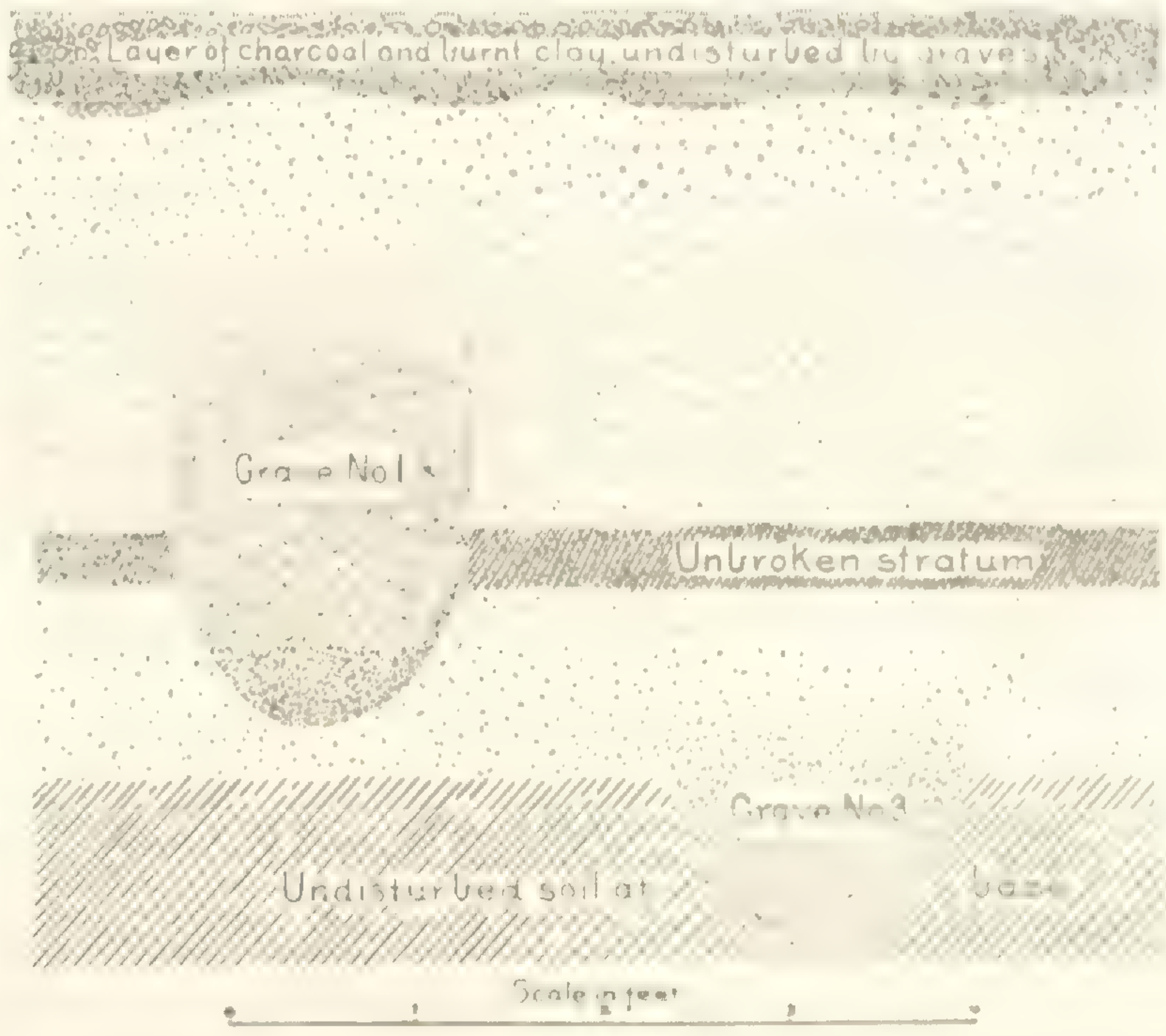


FIG. 6.—Plan of graves. Big Eddy.

Burial No. 4, a child, 2 feet below the surface. Over the pelvis was an earthenware vessel, alongside of which was another one standing upright (which is the position, unless otherwise specified, of all vessels described by us as coming from this cemetery, but not necessarily the case as to vessels referred to by us in accounts of other places of burial), resting on which was a third vessel, inverted. Near the vessels lay a bone pin.

Burial No. 5, a child, extended on the back, had at the left knee a bowl which had been covered with an inverted fragment of a large vessel; at the left side of the skull was a pot. At the head and neck were a few shell beads, some of which were small ocean shells (*Oliva literata*), ground for stringing; and three tubular beads of sheet-copper, with overlapping edges, the longest 1.9 inches in length. One of these beads, analyzed quantitively by Dr. H. F. Keller (see page 258 of this report), proved to be of pure, native copper which could not have been obtained from Europeans.

At the right side of the skull of this burial was a group of five vessels in line: a pot inverted over a bowl; a pot inverted; a bowl turned over a bottle. In addition to all other objects placed with this favored child there lay, on the bottom of the pot which was covered by the bowl, a spoon carved from a heavy mussel-shell (*Lampsilis purpurata*) having the edge of the shell ground away, and a series of neatly-made notches cut at one end to form a handle.

Burial No. 6 lay partly flexed on the left side, 3 feet 9 inches down. Near the skull was a leaf-shaped point of flint, about 1.5 inches in length, while back of the

head was a considerable quantity of ground oxide of iron having a purple hue. At the pelvis were: a bottle, and a bowl having within it another bowl inverted.

Burial No. 7, an extended skeleton of a child, had, near the skull, a bottle with a short neck, which was covered neatly with a small, inverted pot, the rim of which rested on the body of the bottle, thus keeping the neck intact and the interior of the bottle free from clay. Near these was a bowl turned over another bowl, which was itself inverted.

Burial No. 8 lay a little more than 2 feet below the surface, in an extended position so far as it went, the upper part of the thorax and the skull having been cut away by a later burial. This burial (No. 8), it should be borne in mind, though found without associated objects, had lost that part with which artifacts usually are found.

Burial No. 9, at full length on the back, 3 feet 8 inches below the surface, had at the skull a bowl inverted over a bottle. At the left tibia were eight neatly-made projectile points of flint, leaf-shaped, as are practically all arrowheads found along St. Francis river.

Burial No. 10, a child, extended on the back, 3 feet down, had a bowl on one side of the head and a bottle on the other side, the opening covered with a mussel-shell much decayed.

Burial No. 11. This burial, which had been cut away from the thorax upward, formed part of what had been a skeleton extended on the back. At the right knee were two vessels.

Burial No. 12, a young child, 3.5 feet down, had a pot at the left side of the skull.

Burial No. 13, at full length on the back, 42 inches down, had at the right side of the skull, but somewhat above it, five vessels, one of which, a small pot, was inverted over the opening of another vessel, while two of the remaining three vessels had mussel-shells in association. At the left side of the skull was a sixth vessel. Near the greater deposit of pottery was a piercing implement of bone.

Burial No. 14, badly disturbed by a later burial, had, at the left elbow, an earthenware vessel, and near the left foot a pipe of earthenware, having projections extending outwardly from the base of its bowl, a type common in Arkansas.

Burial No. 15, an aboriginal disturbance, 5 feet in depth, had a lot of small, round pebbles at the left hand, and a bowl at the left of the pelvis. Beneath the bowl was an antler of a deer, having two tines cut from it.

Burial No. 16, a child, extended on the back, somewhat more than 3 feet from the surface, was without artifacts—this fact emphasizing their almost uniform occurrence with burials in this cemetery.

Burial No. 17, a small child, lying at a depth of 3 feet, had a pot at the right of the skull.

Burial No. 18, extended on the back, at a depth of 2.5 feet, had at the neck a single shell bead, and at the left hand and forearm a bottle and a bowl.

Burial No. 19, a very young child, somewhat less than 2 feet down, lay with

a small pot, over which, no doubt, the base of another vessel had been turned, though a blow from our digger disarranged the fragment so that it was not seen in place.

Burial No. 20, extended on the back, about 3 feet deep, had at the right elbow a pot, and farther up the arm a bottle. At the skull was a large bowl.

Burial No. 21, a child. At the head was a bottle, near which was a small pot containing a very diminutive bottle.

Burial No. 22, a young child, 2 feet down, with a pot near the skull.

Burial No. 23, an adolescent, extended on the back, more than 4 feet in depth, had, at the right side of the head, a pot, and a bowl at the right humerus.

Burial No. 24, an adolescent, lying in the same position as the preceding burial and at about the same depth. On the right side of the skull, which it had crushed, lay a pot, and on the left side another pot having a mussel-shell within it, as had a number of other vessels at this place. At the right and left of the cranium, just at the ears, one on each side, were ear-plugs of shell, resembling short, thick, blunt pins—a well-known type.

Burial No. 25, partly flexed on the right side, one foot down, had a pot at the left shoulder. This burial and the succeeding one came from the field we have referred to, and lay not far from the surface.

Burial No. 26, a child, with whose bones were a bottle having a shell over the opening, two bowls, and two pots. In one of the pots was a shell spoon which unluckily had been badly broken by one of our sounding-rods. Near the skull, which was crushed, were two ear-plugs made from mussel-shells (*Quadrula heros*). Below the head of each of these ear-plugs is a groove encircling the shank.

Considering the disturbance, aboriginal and recent, that had taken place in the cemetery near Big Eddy, remarkably few objects were found separated from human

FIG. 7.—Vessel No. 41. Big Eddy. (Diam. 8 inches.)

remains. The list of such objects is as follows: a "celt" of flint, about 4.6 inches in length; a small "celt" of sedimentary rock; a shell spoon made from a mussel-shell (*Lampsilis purpurata*); two disks made from fragments of pottery vessels, one with central perforation and one without it; a tine of a deer-antler, separated by circular cutting and subsequent breaking; a few vessels of earthenware.

The pottery found by us in this cemetery, sixty-seven vessels in all, was in many cases so decayed and crushed that little but crumbling bits remained on removal. Among the vessels preserved were few of types not already well-known in the region.

The following vessels are of more interest than are the majority of those from this place.

Vessel No. 18. The vase shown in Plate IX is coated with red pigment and has around the neck four solid projections which are conventionalized loop-handles. The vessel is supported by four feet whose notched margins, in conjunction with the shape of the feet, probably represent cloud symbols.

Vessel No. 41. This bowl, shown in Fig. 7, is more striking in reality than is the half-tone representation of it, as the profile view introduced to display the heavy coil of hair on the back does not show enough of the face to portray its rather interesting features. The ware is thick. There are two rude, encircling, incised lines around the upper part of the body of the bowl.

Mound near Bay Ferry, Cross County.

In a cultivated field, the property of Mr. R. Block, of Vanndale, Ark., is a mound about one mile in a S. by W. direction from the landing at Bay Ferry. The mound, of clay, 5 feet 9 inches in height and 48 feet in diameter, is in the form of a truncated cone.

Nine trial-holes carried to the base of the mound came upon burials in six instances, all badly decayed.

With three of the burials were six vessels, two to each, of common shape, undecorated and dropping into fragments.

Easterly, in full view from the mound, is a ridge apparently left by wash of water. Trial-holes sunk in this place, which we thought might have been utilized for burials, were unproductive.

The Rose Mound, Cross County.

About 3 miles below Parkin is the Rose Place, well-known in the neighborhood, a part of which now belongs to Mr. P. H. Wissinger, of Parkin, Ark., and is called the Mound Field.

This field, in reality a great mound, quadrangular with rounded corners, generally flat, but having many inequalities of surface, lying in woods, about one mile in from the river, seemingly in the past was part of a tongue of land pointing westward. Although the side of the mound nearest the river at the present time is on the north, at the time of the making of the mound the course of the river was to

BIG EDDY, VESSEL NO. 18. (FULL SIZE.)

COCKAYNE, BOSTON.

the westward of it and in the immediate vicinity of the mound. The mound was formed by digging a large trench on the eastern part of the tongue of land and separating this tongue from the mainland on that side. There are also remains of a trench at the western end which cut off the tip of the tongue. The other sides of the mound look out upon swamp, dry at the time of our visit, which is considerably lower than was the tongue of land originally.

The northern, eastern, southern, and western sides of the mound are in length, respectively, about 849 feet, 471 feet, 900 feet, and 270 feet. The eastern side runs almost due north and south.

The height of the mound is difficult to determine. Its altitude on the eastern side, taken from the level of the ground beyond the trench, is from 3 to 6 feet. From the other sides, however, the height is much greater—15 feet or more in places, but this includes much of the original height of the tongue of land. Perhaps the added part may be judged from the present height as taken from the level ground on the eastern side, and this accretion, it is evident by the nature of the soil, slowly developed during a long period of occupancy. The surface of the mound, often to a depth of 5 feet and more, is not the alluvial soil of the surrounding territory and of the lower parts of the mound, but is rich black loam containing midden-debris and many fireplaces which sometimes are marked by great layers of soil blackened by charcoal, and strata of clay burnt almost to the hardness of brick.

Not far from the center of the mound is a conical mound about 4 feet high and 40 feet across the base, which presumably was the site of the chief's residence.

The entire surface of the great mound is scarred with remains of holes made by seekers after pottery, who have so thoroughly dug the burial places of St. Francis river. It was difficult to find an area of even a few square feet on any part of the great mound, which did not show traces of the spade.

Digging was done by us mainly and most successfully in parts of the great upper surface of the mound, where humps and rises above the general level indicated a more prolonged period of local occupancy than there had been on the flatter parts, though there was no portion of the mound in which we dug, level or otherwise, where some hole or holes did not come upon human remains.

Some of the burials lay just below the surface, though, as the mound has been under cultivation, originally they probably had been at a greater depth. A few other burials were so much as 5 feet below the present surface. Some of these deeper burials had been made when the mound was lower than it is at present, as unbroken layers of soil, and sometimes fireplaces, lay considerably above them. Some deep burials, however, were clearly traceable from the present surface of the mound.

Incidentally it may be said that though we carefully avoided digging where superficial signs of the work of others were apparent, we came upon a number of mutilated skeletons, parts of which had been dug out, and we found also pottery and bones which had been pierced by sounding-rods, but which, no doubt, had been in too soft a condition at the time of contact to indicate their presence.

Twelve working days, with nine men to dig and four to supervise, were devoted by us to the Rose Mound. During this time two hundred and seven burials were found by us, no fewer than seventy-one of which were of children or of infants.

The form of burial of some of the interments, especially in the case of children and infants, was not determined by us, but the great majority of burials lay extended on the back. The following exceptions to this rule were noted:

Partly flexed on the right side	15
Partly flexed on the left side	7
Closely flexed on the left side	1
In a squatting position	4

Three burials were as follows:

Burial No. 75, an adult, had the trunk on the back, the thighs somewhat everted and flexed, and the legs flexed, bringing the feet together.

Burial No. 166, a child, had the trunk on the back, the thighs flexed at right angles upward, and the legs flexed on the thighs.

Burial No. 203, an adult, lay closely flexed and semirecumbent on the back, the head considerably higher than the pelvis.

The number of vessels found by us, broken and whole, in the Rose Mound was five hundred and eighty-seven. Very many of these were left in place, their condition being such as to make removal practically impossible, and their quality of a kind to inspire no wish to add them to our collection. Of the vessels taken from the mound by us two hundred and thirty-five were presented to Mr. Wissinger, the owner of the property.

We shall describe the more interesting vessels from this place at the close of our account of the Rose Mound.

A considerable number of objects were found apart from burials in the Rose Mound, including some pottery vessels. In the case of these latter, however, we believe the separation of most of them may be accounted for by the digging, aboriginal and recent, which had taken place in the mound. This applies also to a number of other objects found, but not to smoking-pipes, which in most of the sites along the river, as well as in the Rose Mound, were found away from burials, and probably were lost in the debris by aboriginal dwellers on the site.

Among the objects found apart from burials were seven earthenware pipes, five of which are rudely made, and all undecorated with the exception of one, which has a very irregular and crudely incised swastika design. Two of the seven pipes (one of which is included among those we have described as coarsely made) were found near fireplaces or kilns and bear no mark of use. They are, moreover, light yellow in color, and though fairly hard, indicate by their shade that the process of firing had not been completed. The remaining pipe of the seven (Fig. 8) belongs to a type before referred to by us as common on St. Francis river, and figured[1] by Holmes as coming from Arkansas, on which two feet, or supports, project forward from the base of the bowl to enable the pipe to maintain an erect position when

[1] Plate XXXIII, d. "Aboriginal Pottery of Eastern U. S."

placed on a level surface. It is interesting to note that pipes are on sale at the present day, having precisely similar supports intended for the same purpose. The pipe here shown by us has these supports well defined which display flattening on the under surface as if through wear. Some Arkansas pipes of this type, however, show the projections as mere knobs, as if conventionalizing had begun.

Likewise apart from burials, were found: two earthenware balls similar in size to objects used in our game of "marbles"; one ear-plug of earthenware; a

FIG. 8.—Pipe of earthenware. Rose Mound. (Full size.)

number of disks of pottery, several modeled and fired, but most of them made from fragments of earthenware vessels—the greater number of the latter having central perforations as is usually the case with these disks in northern Arkansas at least; a number of rude objects of earthenware so imperfectly fired that many of them crumbled into fragments on removal. These objects, which may be described as having roughly the shape of a blunt cone, vary in height from 4 to 8 inches and were invariably found apart from burials and in the neighborhood of fireplaces which probably had served for the preparation of pottery.

Cones of this type[1] vary somewhat in minor particulars, some having, and some being without, holes in the apices, and will be referred to in connection with other mounds along the river.

These fireplaces were not characterized by the ordinary debris found near fires devoted to culinary purposes, but contained masses of burnt clay, of irregular shape, ranging in size to double that of a closed hand. Possibly these masses had served in the construction of ovens for firing pottery, as with these masses were found numbers of fragments of vessels, which had a new appearance and did not seem to have been in use, but rather appeared to be parts of vessels that had broken in the process of firing.

Side by side were three objects, similar to one another, of half-fired clay, flat as to the base, with convex upper surface and rounded ends, much resembling certain loaves of bread in shape. Longitudinally, on each upper surface, is a groove .75 inch in width.

Also apart from burials were four tubular beads of copper; one perforated cylinder of charred wood; piercing implements of bone; eight arrowpoints of flint, seven leaf-shaped, one barbed; rude discoidal stones, some made from pebbles; flint knives; chisels wrought from pebbles of flint; pitted stones; seven "celts," five of quartzite, one of igneous rock, and one of flint, ranging from 2.1 inches to 4.5 inches in length.

We shall now turn to artifacts which were associated with burials.

Of the two hundred and seven burials in the Rose Mound there were twenty-two which had with each of them, usually, but not always, associated with a vessel or vessels of earthenware, a single bead of shell, two beads of shell, or a number of shell beads, nearly all of which were badly decayed.

Of these twenty-two burials, four were of adults and eighteen were of children, including infants.

We shall now describe in detail all burials found by us at the Rose Mound that were accompanied with artifacts other than shell beads or vessels of earthenware, but we shall include in our description beads of shell and pottery utensils when they were found with these burials in connection with other objects.

Burial No. 3, adult, partly flexed on the left side, had eighteen curious objects of earthenware, pillar-shaped, flat on what presumably are the bases, and slightly

[1] It is interesting to note that similar cones were in use under like conditions in prehistoric Europe. In an article on the excavation of stone-age dwelling-pits and cremation-graves in the Hanau region, Prof. Friedrich Heiderich writes—"The second dwelling-pit was likewise round, and of about the same dimensions as the first. A definite fireplace was not recognizable within it [as there was in the first]. There were found a quantity of sherds of large vessels, quite like those of the former pit, but lying scattered throughout. In the center of the pit a well preserved mealing-stone lay overturned. . . . . Further there was found in the vicinity of the mealing stone, a peculiar object of burnt clay, of sugar-loaf form—the use of which is problematical. Its height is 16 cm.; the diameter at the base, 10 cm. This object is not perforated at the point, as are similar ones which have been found in other localities. [Translation]—*Korrespondenz-Blatt der Deutschen Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, XLI–1–3, p. 11, *Archiv fur Anthropologie, N. F., B.* IX.

With the text is an illustration showing a cone of earthenware greatly resembling some found by us on St. Francis river.

concave on the upper ends. They were distributed in groups along the body, and were so poorly fired that many of them fell apart on removal. Such as were saved range between 3 and 4 inches in length. One of these objects is shown in Fig. 9.

In the Rose Mound and in other dwelling-sites along the St. Francis we found objects similar to these lying singly, but never associated with bones.

Presumably this type of object was used as a support for receptacles placed in fires, to raise them from the ground in order to give the fire full play on the surface of the base.

Doctor Koch-Grünberg[1] figures and describes supports almost exactly similar to these, except the supports are hollow, as in use among modern Indians of northwestern Brazil to hold vessels from the ground while cooking is going on.

Fig. 9.—Earthenware support. With Burial No. 3. Rose Mound. (Full size.)

We are indebted to Mr. Charles C. Willoughby for the information that Dr. W. C. Farabee brought to Peabody Museum, Cambridge, Mass., from his expedition among Indians of the Upper Amazon region, clay standards 10 to 12 inches in length, which were used as supports for a receptacle in which earthenware vessels were fired.

Burial No. 10, a child, had ten vessels, some placed on, some set within, others. Near the head were two shell ear-plugs and three beads of shell.

Burial No. 15, in addition to four vessels of earthenware, had a single shell bead at the neck, and two rude, discoidal stones, each about 3.5 inches in diameter, made, one from limestone, the other from sandstone.

Burial No. 17, an adult extended on the back, had, besides four pottery vessels, a ball of hematite at the left ankle, and two tubes of bone, badly broken.

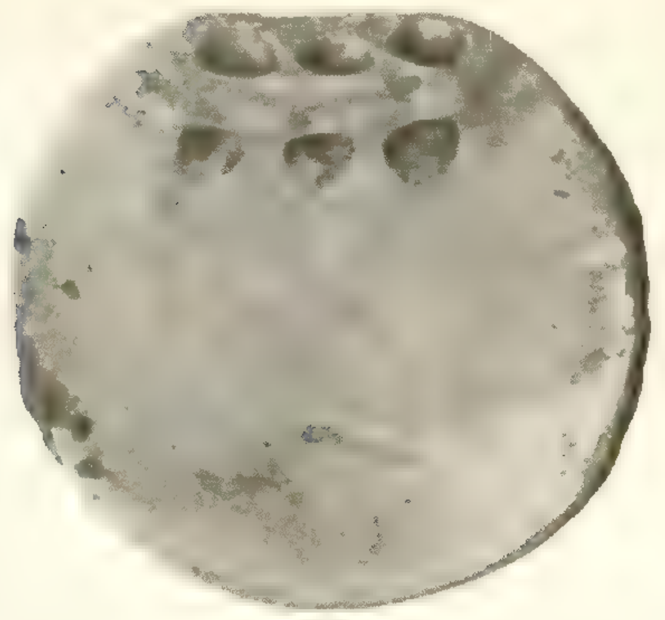


Fig. 10.—Ornament of shell. With Burial No. 19. Rose Mound. (Full size.)

Burial No. 19, a child extended on the back, had three vessels of earthenware; a number of shell beads at the neck, of considerable size and evidently wrought from the columella of a marine shell (*Fulgur*); two ear-plugs of shell; two small, flat, shell ornaments, one triangular with one and three perforations at opposite ends, respectively, the other elliptical, squared at the ends, each of which was perforated; a circular ornament of shell with a perforation through a portion which projects at right angles and another perforation through the body of the ornament; another circular ornament of shell with three perforations, side by side, running through the base of a projecting part (Fig. 10). At the left of the pelvis was a "celt" of quartzite, 3.5 inches in length. Shell beads were at

[1] "*Zwei Jahre unter den Indianern.*" Vol. II, p. 207, Fig. 125.

the knees, while across the chest was an object of thin sheet-copper, 10.5 inches in present length. This object in shape resembles the head of a lance with part of the point missing. There are two perforations, about one inch apart, centrally placed, approximately. The lower three inches of this object is riveted to the remainder. It is hardly necessary to remind those familiar with aboriginal copper-working that riveting of parts does not imply repair, but rather that nuggets hammered out have been pieced together to obtain a requisite amount of the sheet metal to make the object in view.[1]

Burial No. 21, a very young child's skeleton, having traces of sheet-copper on the lower jaw and on two ribs. With this burial were seven vessels of earthenware.

Burial No. 23, a child, with shell beads at the neck and three bone beads on the chest. With it was a single pottery vessel.

A burial comes next in order which was not exactly determined as to the association of accompanying artifacts. That is to say, there being several burials in the immediate neighborhood, we hesitated to attribute the articles found to any particular one. At all events there lay together: ground red oxide of iron; eight vessels of earthenware; four rude discoidal stones; one chipped pebble; two incisors of the beaver.

Burial No. 28, a child having an ear-plug made from the penultimate whorl of the conch (*Fulgur perversum*) at the right temporal bone, and two vessels of earthenware.

Burial No. 29, an adult extended on the back, had four earthenware vessels, one discoidal stone, one pebble, five parts of tines of deer-antlers.

Burial No. 38, a child, had three earthenware vessels; a rude disk of pottery, about 3.5 inches in diameter.

Burial No. 43, a child, had one vessel of earthenware, one shell bead, and two shell ear-plugs, each of the last having a single perforation near the end worn back of the ear, probably for more secure attachment (Fig. 11).

FIG. 11.—Ear-plugs of shell. With Burial No. 43. Rose Mound. (Full size.)

Burial No. 46, a child, had four earthenware vessels and two shell ear-plugs.

Burial No. 47, a child, had five vessels of earthenware; three pottery disks; two round pebbles; one flint disk; shell beads at the neck.

Burial No. 51, an adult extended on the back, was accompanied with one earthenware vessel and one bone bead.

Burial No. 54, a child, had four vessels, and a pipe of earthenware at the head. This pipe (and it is not the first time we have found a pipe with the burial of a child, though the event is unusual) has rude, incised decoration and a slight indication of an animal's head. Four feet have been present on the base of the portion intended

[1] See "Metal Work." Handbook of American Indians.

ROSE MOUND, CEREMONIAL SPEARHEAD OF SHEET-COPPER. (LENGTH, 16.25 INCHES.)

COCKAYNE, BOSTON.

to receive the stem, in fulfillment of the animal concept, but all have disappeared through breakage (Fig. 12).

Burial No. 56, an adult, extended on back, had six vessels; near the skull, shell beads and traces of metal hardly more than carbonate of copper.

Burial No. 62, a child, partly flexed on the right side, was accompanied with eight vessels, in one of which was a shell spoon; two shell ear-plugs, spool-shaped, both from the left side of the skull.

Burial No. 78, an adult in a squatting position, the knees turned somewhat to the right. From the right shoulder to the pelvis, point downward, was an unique object of sheet-copper, doubtless a ceremonial spearhead, shown in Plate X. There are single perforations, one at the point and one at the base of the spearhead. The

FIG. 12.—Pipe of earthenware. With Burial No. 54. Rose Mound. (Full size.)

end of the right prong has disappeared through decay. A large part of the left prong had been attached to the rest, as is indicated by perforations. Curiously enough, no earthenware vessels were found with the remains of the person with which this interesting piece was deposited.

Burial No. 84, an adult, extended on the back: two vessels; a mass of red pigment at left shoulder.

Burial No. 86, an adult, in squatting position but somewhat tilted backward: shell beads at neck, thighs, and ankles; four vessels. Conforming to the outline of the left side of the skull was an oblong ornament of sheet-copper, 9.3 inches by 4.1 inches in size. This object of aboriginal make, as the overlapping parts testify, lay directly on the skull, and on the ornament as well as on the skull some hair remains. The upper surface of the ornament (which is undecorated) has been cov-

ered with fabric and with bark. There are two holes centrally placed, some distance apart, which were for attachment by means of a band, part of which remains, extending longitudinally on the inner surface to the first hole, through which it passed, and continuing along the upper surface, entered the second hole. Another sheet of copper, 6.1 inches by 5.6 inches, lay on the thorax. This sheet had been attached in a manner similar to that of the ornament on the head, with the exception that, in place of a band, two parallel cords had been used.

Burial No. 90, an aboriginal disturbance: three pottery vessels, and one drinking-cup wrought from a conch-shell (*Fulgur*). Near the extremity of the beak of the shell is a hole for suspension.

Burial No. 104, a child, the skull lying partly in a bowl with which was a bottle, was accompanied with two ear-plugs of shell.

Burial No. 118, a child, had ten vessels; a mass of red pigment over the skull; a "celt" of dark green, silicious rock, 2.8 inches in length, at left shoulder; shell beads.

Burial No. 122, a child, extended: two vessels; sixty-six pebbles from the size of a rifle-ball to that of a fist; two shell beads; fragments of sheet-copper at the left side of the jaw; a decaying band of sheet-copper fitting on the left central part of the skull.

Burial No. 126, adult, partly flexed on the right side: a small earthenware pendant rudely representing the head of an animal.

Burial No. 127, a child, extended on the back: seven vessels; shell beads at neck; three pebbles artificially rounded.

Burial No. 136, a child: two vessels; two ear-plugs; shell beads at neck.

Burial No. 143, an adult, full length on the back: three vessels; a mass of red pigment at the right hand, which rested beside the thigh.

Burial No. 146, a very young child with which was a rudely hexagonal section of shell, 1.5 inches in maximum diameter, which at one time had a single perforation near the margin at one side. This perforation, having broken through, has been replaced by two holes just below.

Burial No. 150, an adult, extended on the back: three vessels; three bone piercing implements under the back; at feet, sixteen leaf-shaped arrowpoints of flint, some flaked on one side only.

Burial No. 154, an adult, partly flexed on the right: two vessels; a bone pin.

Burial No. 156, a child, extended on the back: four vessels; shell beads at neck; two ear-plugs at the right side of the skull and one at the left side.

Burial No. 164, a child, extended on the back but having the right leg crossing the left at the ankle: one vessel; shell beads at neck, with small perforated disk of shell. Slightly apart from this burial, together, were two disks of shell, each having a most interesting form of perforation for attachment, consisting of a hole entering and emerging from the same side of the ornament (Fig. 13).

Burial No. 165, a child, extended on the back: two vessels; a clay disk 1.5

inch in diameter, modeled, not cut from a fragment; another clay disk in one of the vessels.

Burial No. 169, a child, extended on the back: two vessels, in one of which was a mussel-shell carved to form a spoon; shell beads at the neck.

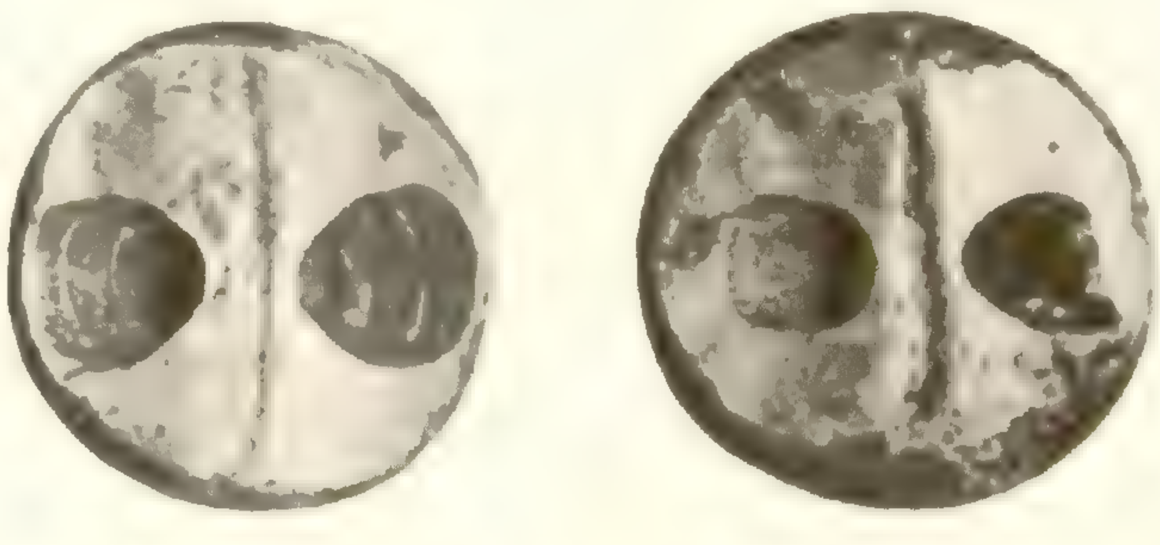


FIG. 13. Ornaments of shell. With Burial No. 164. Rose Mound. (Full size.)

Burial No. 170, an adult, extended on the back, had seven vessels; two shell ear-plugs found (as these ear-plugs usually are found) one at each ear, but in this case the knob of one of them pointed backward and not toward the front, the direction toward which the knobs of these ear-plugs usually point. However, there was evidence of disturbance with this burial to account for the disarrangement.

Burial No. 172, a child, extended on the back, was accompanied with a single vessel, but the burial was marked by the presence of broken pottery and other evidence of disturbance. Nearby, on bits of a broken vessel, were fragments of what had been a rude comb of bone. The material is badly affected by time and by moisture. The parts recovered are shown in Fig. 14.

FIG. 14.—Aboriginal comb of bone. With Burial No. 172. Rose Mound. (Full size.)

The discovery of this comb is interesting, inasmuch as there has been considerable discussion as to whether or not combs were in use among aborigines of our country before the coming of Europeans.

Inasmuch as we found nothing along St. Francis river, except this comb, that could in any way be regarded as showing intercourse between the aborigines and white people, we believe, considering the number of sites visited, the amount of digging done by us in these sites, and the quantity of artifacts found, that this comb also is prehistoric.

Incidentally we introduce here the representation of a comb (Fig. 15) kindly identified by Prof. F. A. Lucas to be made probably from horn. This comb, which is the only other one ever found by us in all our digging, is interesting from the fact that though the shape is undoubtedly copied from a European model, the decoration points to Indian workmanship. This comb was found by us in the mound on Murphy Island, St.

Johns river, Fla., somewhat above Palatka, and lay with superficial burial deposits of glass, iron, and the like, which distinctly denote a post-Columbian period.

Burial No. 173, a child: seven vessels; a chisel wrought from a pebble, at skull.

Burial No. 176, a child, extended on the back: a mass of red oxide of iron at the outer side of the right tibia. We find in our field notes thirteen vessels credited to this burial, but as by their numbering it is apparent the vessels were not taken out consecutively, there may be an error in regard to the number, and we feel it would not be wise to cite this burial as a record. In one of the vessels were two rude, discoidal stones.

Burial No. 179, a young child: two vessels; two ear-plugs of shell, lying together, a little apart from the skull.

Burial No. 180, a child, partly flexed on the right: three vessels; at the neck thirty tubular beads of bone from 1 to 1.5 inch in length.

Burial No. 191, an adult, full length on the back, had two vessels; a mass of

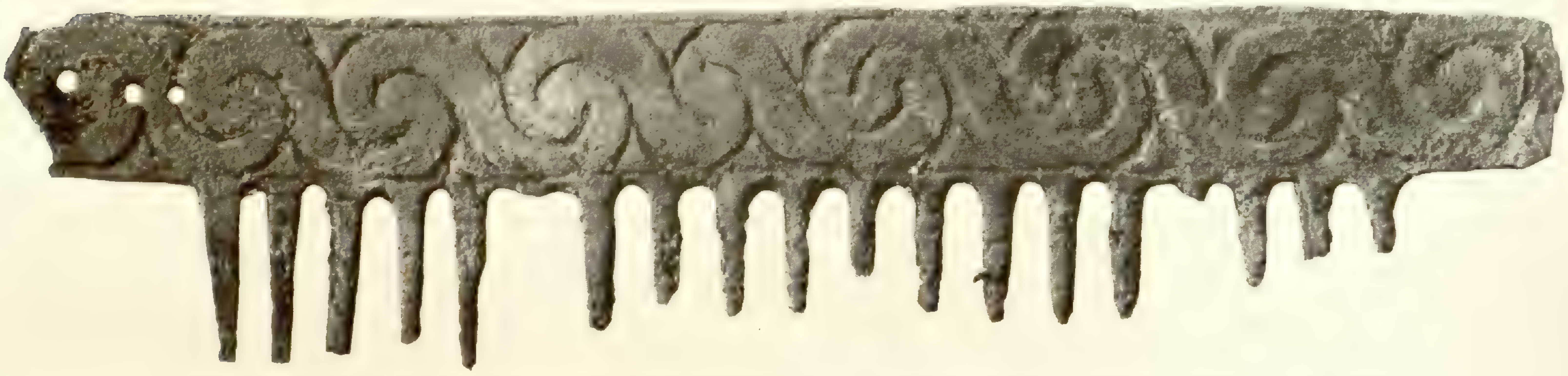


FIG. 15.—Comb of aboriginal make but of post-Columbian period. Mound on Murphy Island, Florida. (Full size.)

red oxide of iron, such as is used for pigment, but wrought into the form of a cone about 5.5 inches in height.

Burial No. 192, an adult, extended on the back: six vessels; seven leaf-shaped points of flint at the right knee and one at the right hand; knife of flint at the right elbow.

Burial No. 203, an adult, closely flexed and semirecumbent on the back, head somewhat higher than the pelvis: one vessel; a shell ornament in small fragments.

Burial No. 205, a child, full length on the back: three vessels; three shell beads at the neck; a shell gorget on the chest (Fig. 16). This gorget, shaped from the body-whorl of a marine shell (*Fulgur*), belongs to a well-known type representing the human face. This type of ornament has been found with aboriginal burials, in the Southern States usually, but has been met with as far north as Manitoba.[1] A series of these gorgets is figured and described in the Second Annual Report of the Bureau of Ethnology.[2]

[1] Henry Montgomery, "'Calf Mountain' Mound in Manitoba." Amer. Anthropologist, Jan.–March, 1910. Plate III.

[2] William H. Holmes, "Art in Shell of the Ancient Americans," Plates LXVII, LXVIII, LXIX.

Near a burial, but not assuredly with it, was a small undecorated bottle containing twenty-six hollow sections of delicate bones, from somewhat more than .5 inch to about 1 inch in length. These objects can hardly be considered beads, as they have been broken rather than cut apart.

While at work in the Rose Mound, it was decided to examine with the utmost care all artifacts found with the next fifty burials, exercising special attention in the case of earthenware vessels which, owing to their commonplace forms and to the paucity or to the entire lack of decoration on them, or else to their very fragmentary condition, otherwise might not have had recorded in our notes the most trifling points connected with them.

FIG. 16.—Gorget of shell. With Burial No. 205. Rose Mound. (Full size.)

Accordingly, those fifty burials first found after this decision was made (Burials Numbers 53 to 102, inclusive) were recorded with the fullest detail, and the results give, among other things, a fair idea as to the general character of the pottery on St. Francis river, making allowances, of course, for fashion which varied somewhat in the different sites.

The fifty burials in question were as follows:

Adults	31.
Adolescents	2.
Children, including infants	17.

The following burials had no associated artifacts:

Adults	2.
Children, including infants	5.

One adult had an artifact but no earthenware.

Earthenware vessels and other objects were with the following burials:

Adults	8.
Children, including infants	3.

Burials accompanied with earthenware vessels only were:

Adults	20.
Adolescents	2.
Children including infants	9.

The number of earthenware vessels found during the unearthing of the fifty burials was one hundred and forty-nine. Thirteen of these vessels were found apart from burials, their position being no doubt due to aboriginal disturbance or to comparatively recent digging.

The one hundred and thirty-six vessels with burials had been placed numerically with the dead as follows: Of the eleven burials with which pottery and other artifacts had been placed, one adult had one vessel; two had two vessels; one, three vessels; one, four vessels; three, six vessels, each, respectively. Two infants had four vessels each and one had no fewer than eleven vessels.

Of the thirty-one burials which had pottery alone in association: one adult had one vessel; eight had two vessels; three had three vessels; seven had four vessels; one had seven vessels, each, respectively. Two adolescents had two vessels each. Of the nine children, including infants: two had one vessel and four had two vessels; one had three vessels; one had four vessels; one had five vessels, to each respective burial.

The one hundred and forty-nine vessels found during the unearthing of the fifty burials were divided as to form as follows:

Bottles	40.
Pots and bowls	104.
Other forms	5.

Of the bottles twenty-one were of ordinary forms and without decoration. Five had trivial decoration, such as notches around the base or at the opening; while fourteen differed more or less from the general average of bottles, either in form or in having a uniform coating of red pigment, or, in one instance, red pigment in bands.

Thirty of the pots and bowls were undecorated, being even without ears, loop-handles, or appendages of that kind; while twelve had loop-handles or ears, but otherwise were entirely plain. Thirty-two of the bowls and pots had only trivial

ROSE MOUND, VESSEL NO. 271. (FULL SIZE.)

COCKAYNE, BOSTON.

decoration, such as knobs, incised lines around the necks, notched or scalloped margins, or fillets in relief near the openings. Nine had trivial decoration in addition to ears, loop-handles, and the like. Five pots and bowls had decoration of a commonplace character on the bodies, such as rudely incised parallel lines or coarse punctate markings; and sixteen vessels of the types in question were somewhat removed from the commonplace by decoration with red pigment or by having, or having had (for many of the bowls of this class were interred after their decorative devices had been broken off and lost) the projecting modeled heads of quadrupeds or of birds, or the heads and tails of fish, often greatly conventionalized.

The five vessels of forms other than bottles, pots, and bowls, will be described and illustrated in the detailed account of the more noteworthy vessels from the Rose Mound, the numbering of the vessels included in this analysis being 175 to 323, inclusive.

Red pigment had been used on twenty-one of the one hundred and forty-nine vessels in question: thirteen times as a uniform coating; five times in bands, with the ware for a background; twice in conjunction with brown pigment; and once in combination with white pigment.

We shall now return to the pottery in general found at the Rose Mound. Vessels of earthenware lay with most of the burials—one infant, as we have said, having had no fewer than eleven.

The arrangement of the vessels was, in the main, as they were found elsewhere on the river—some containing other vessels, some with inverted vessels over them.

Pottery, as a rule, was found in the neighborhood of the skulls, but such was not always the case.

We shall now describe in detail the most interesting vessels from Rose Mound.

Vessel No. 271 (shown in two positions in Plate XI) is a bowl of yellow ware, having projecting from one side the modeled head of a quadruped, which is a rather striking piece of work and considerably superior to most attempts of the kind known in this region. Opposite the head is a flat space which presumably takes the place of the tail. The legs of the animal are indicated by rather rude, incised markings. On the whole, this piece is an unusual one.

Vessel No. 252. This little bottle (Fig. 17), of a known but uncommon type, lay with the bones of a child. The crescentic body recalls the head of a war-club of a type known to our Indians, and it is not unlikely that this was copied in pottery just as the Peruvians embodied their form of war-club in the shape of some of their vessels.

Vessel No. 177. This vessel (Fig. 18), a cup, may have been used as a receptacle for paint, as red pigment remains on one side of the interior. It is just as likely, however, that the presence of this coloring matter arose from accidental contact.

Vessel No. 350, a bottle of dark ware (Fig. 19), having on the body an incised design based on the swastika. Around the neck also is incised decoration (shown

Fig. 17.—Vessel No. 252. Rose Mound. (About full size.)

Fig. 18.—Vessel No. 177. Rose Mound. (About full size.)

FIG. 19.—Vessel No. 350. Rose Mound. (Height 7.25 inches.)

in diagram in Fig. 20) which perhaps represents a highly conventionalized form of the serpent.

Vessel No. 564. A bowl of yellow ware (Plate XII), coated with red pigment

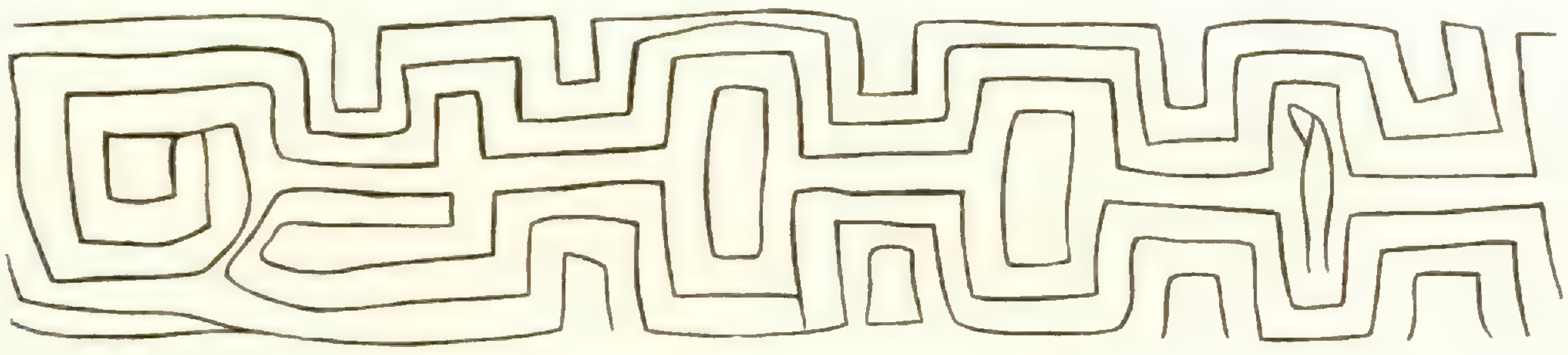


FIG. 20.—Vessel No. 350. Decoration.

on the outside, has by way of decoration on the inside, a curious human figure in red pigment, with extended legs and upraised hands and arms. Below and on each side of this figure, also in red, are stepped designs, or cloud-symbols.

Vessel No. 388. This bottle (Fig. 21), like the one just described, is included

FIG. 21.—Vessel No. 388. Rose Mound. (Height 6 inches.)

ROSE MOUND, VESSEL NO. 564. (DIAMETER, 13.4 INCHES.)

COCKAYNE, BOSTON.

among the very small number of vessels found by us on the St. Francis on which incised decoration of even average excellence appears. The body of the bottle bears a decoration which we consider to have been derived from the crested ser-

FIG. 22.—Vessel No. 528. Rose Mound. (Full size.)

pent. Varieties of this decoration are not uncommon on pottery from parts of Arkansas and of Alabama.

Vessel No. 528. A bottle of coarse, yellow ware, representing a grotesque human figure (Fig. 22). There are two perforations in each ear, through which

possibly the bottle was suspended. At all events, the vessel does not stand without outside support.

Vessel No. 570. A bottle of yellow ware, shown in Fig. A, Plate XIII, has, on the outside, in red pigment, a design based upon the swastika, the symbol of the four winds or directions. There is red pigment interiorly on the neck.

FIG. 23.—Vessel No. 246. Rose Mound. (Diam. 8.5 inches.)

Vessel No. 248, a bottle of yellow ware (Fig. B, Plate XIII), bears exteriorly a design in red pigment also showing wind-symbols. In form this bottle represents a gourd, possibly with part of the blossom attached.

Vessel No. 246. This effigy bottle (Fig. 23), graceful and well modeled, rep-

A

B

ROSE MOUND, A, VESSEL NO. 570; B, VESSEL NO. 248. (FULL SIZE.)

COCKAYNE, BOSTON.

ROSE MOUND, VESSEL NO. 280. (HEIGHT, 6.5 INCHES.)

Cockayne, Boston.

resenting a fish, is of beautiful, thin, hard ware, bearing a high polish, and in modeling and in surface is a marked exception to most of the vessels found in the St. Francis valley.

Vessel No. 229. A bowl of hard, yellow ware, 7 inches in diameter, is of interest in that it shows a conventionalized form of decoration based on the animal concept. In diagram (Fig. 24) the inner circle shows the rim of the bowl, outside of which, on two sides, is a pair of eyes. The fore-legs and hind-legs, joined, also appear in relief.

Vessel No. 469. A bottle of dark ware (Fig. 25), having a shoulder or a

FIG. 24.—Vessel No. 229. Decoration. Rose Mound. (About one-third size.)

collar-like addition below the neck, on which are projections which in a region whose inhabitants had been more given to careful work, presumably would have been loop-handles.

Vessel No. 280. In Plate XIV is shown one of the well-known class of head vessels which are fully described and figured by Holmes in his "Aboriginal Pottery of Eastern United States."[1]

These vessels are "found in considerable numbers in graves in eastern Arkansas and contiguous sections of other States," and to our knowledge four belonging to this class have come from the St. Francis valley: one from the mound at Parkin,

[1] William H. Holmes. 20th An. Rep. Bur. Am. Ethn., p. 96 *et seq.*, Plates XXIX, XXX, XXXI, XXXII, XLIII.

now in the Cincinnati Art Museum;[1] one from the Fortune Mound, now in Peabody Museum, Cambridge, Mass., and two found by us in the Rose Mound.

The one now under description came from a grave that had been disturbed in aboriginal times, and the vessels present with the burial had been broken and parts of them presumably had been thrown out. At all events, fragments of this head vessel, which had been badly shattered, were found widely scattered in the ground,

FIG. 25.—Vessel No. 469. Rose Mound. (Height 8.75 inches.)

and some parts we were unable to recover, although long search was made with the aid of a sieve and by passing the soil through the hands of a number of men. Fortunately only such parts of the vessel are missing as belong to the back of the head, and to a part of the side of the head, including the right ear. Almost none of that part of the vessel shown in the plate is a restoration. The face has had a coating of pigment, evidently gray clay, much of which still remains on it. The back of the head has had a uniform coating of red pigment. At the outer side of

[1] Gates P. Thruston. "Antiquities of Tennessee," 2d ed., pp. 94, 95.

ROSE MOUND, VESSEL NO. 474. (ABOUT FULL SIZE.)

COCKAYNE, BOSTON.

the right eye has been an incised figure which evidently resembled the one on the smaller head vessel from the Rose Mound (shown in the next plate), but, unfortunately, only the two extremities of the figure appear on the original part of the larger head. The reader will note that a number of holes are represented in the cartilage of the ear, instead of the great hole often shown in the lobe, in which some ornament usually is represented as inserted. These holes, as shown in this head, are generally present in the head vessels, however.

In conclusion, we would explain that the representation of the vessel in Plate XIV is slightly larger than the vessel itself, and this arose through the need to tilt the vessel slightly for the camera in order to obtain a more satisfactory photograph for the making of the plate.

Vessel No. 539. This bowl, having the head and legs of a frog modeled in relief on the outside, is of special interest only because the head of the frog, which is hollow, has been filled with objects which rattle when the vessel is shaken. Diameter of bowl, 5.7 inches.

Vessel No. 298, a bowl 12.2 inches in diameter, is of yellow ware and has for decoration on the inside, in red pigment, a swastika, or symbol of the four winds or directions. On the outside, also in red pigment, are three concentric circles, doubtless sun symbols.

Vessel No. 378. A bottle of yellow ware (Fig. 26), with a well-made, incised decoration, the design based on a swastika. This bottle is by far the best example of incised work found by us on St. Francis river.

Vessel No. 474. This vessel, shown in Plate XV, is another example of the class of head vessels, one of which already has been described and figured in this report. The vessel under description differs from the one previously described in that it is considerably smaller and has a coating of yellow pigment on the upper part of the face and red pigment on the lower part. The curious incised marking, parts of which remain at the right eye of the larger vessel, is present around part of the left eye of this one. Presumably a short neck has at one time been present on this vessel, but this we have not attempted to restore. The tip of the nose, missing when the vessel was found, has been replaced, however. The back of the head has a uniform coating of red pigment.

Vessel No. 458. A bottle representing a human figure. The nose has been slightly chipped on the upper part by a blow of a spade. On the back is the curious marking sometimes seen on human effigy-vessels of the Middle Mississippi region, which probably represents the spine. The legs, which are shown with considerable detail, extend beneath the base of the bottle. This bottle is somewhat outside the usual style in that the opening is not at the back of the head, but is in the body of the vessel in front of the face (Fig. 27).

Vessel No. 325. This bowl (Fig. 28), found with another exactly similar in shape but somewhat larger, has four holes for suspension, and horizontal extensions on two sides of the rim, probably conventionalized fins.

Vessel No. 40. This vessel, of coarse, yellow ware, of a fairly well-known

FIG. 26.—Vessel No. 378. Rose Mound. (Height 8.6 inches.)

FIG. 27.—Vessel No. 458. Rose Mound. (Height 7.25 inches.)

type, is made up of three compartments, each representing a pot with three loop-handles, which, however, are decorative only, there being no space for the passage of a cord. Openings in the compartments allow them to contain a liquid in common.

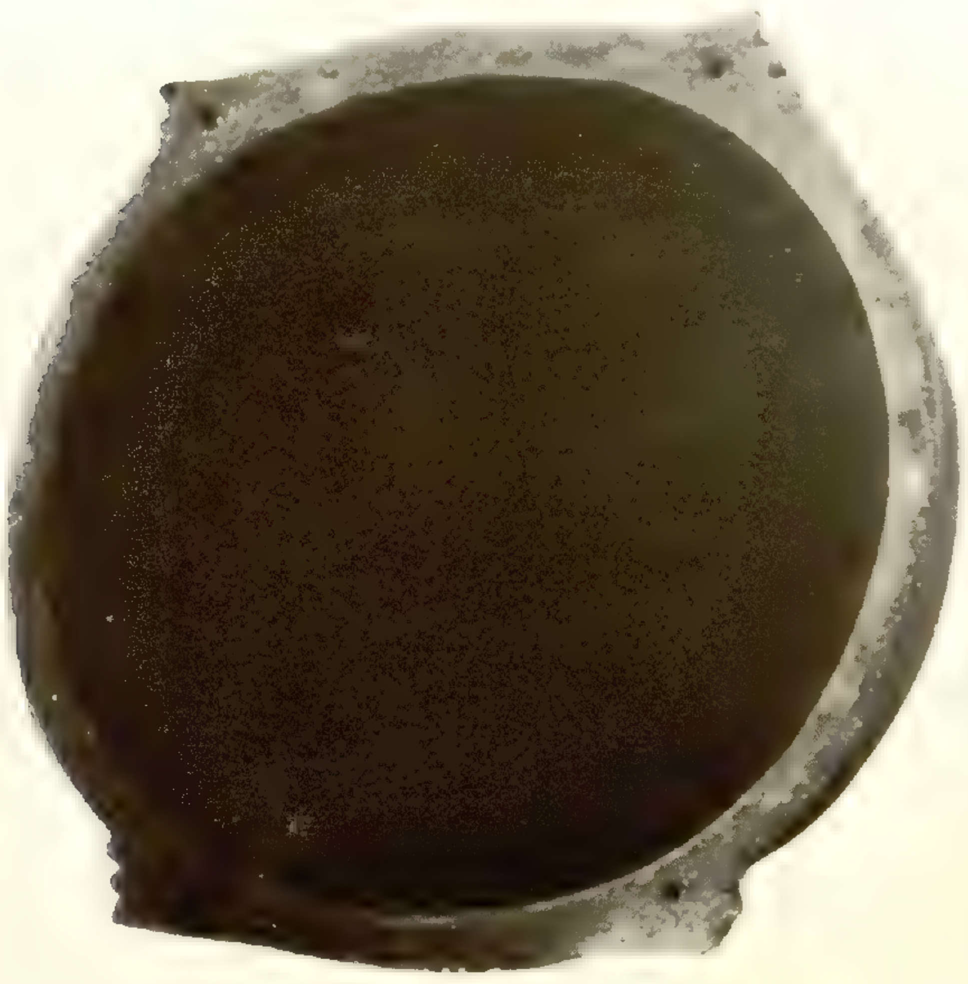


Fig. 28.—Vessel No. 325. Rose Mound. (Diam. 6.5 inches.)

The decoration, consisting of parallel, incised lines on the bodies of two of the compartments, and punctate markings on the body of the third, extends also on the bases in the shape of erratic, incised angles and curves. Height, 3 inches; maximum diameter, 7 inches.

Vessel No. 99. This vessel resembles the one just described, with the exceptions that there are but two compartments; that the decoration, rough incised lines, is confined to the necks; that four small ears project laterally; and that each of the two compartments is somewhat larger than the individual compartments of the other vessel.

Vessel No. 566. This bottle (Plate XVI) has around the body a decoration of alternate bands of red and of light yellow—apparently tinted clays. Around the neck are stepped designs, or cloud symbols.

Vessel No. 46. This vessel, shown in Fig. 29, although of ordinary ware, is more graceful in form than are vessels usually found along the St. Francis. On two opposite sides project heads of some animal (perhaps a raccoon), not modeled

Fig. 29.—Vessel No. 46. Rose Mound. (Diam. 9.1 inches.)

ROSE MOUND, VESSEL NO. 566. (HEIGHT. 7.5 INCHES.)

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ROSE MOUND. VESSEL NO. 542. (DIAMETER 8.75 INCHES.)

COCKAYNE, BOSTON

ROSE MOUND, VESSEL NO. 185. (HEIGHT, 8.5 INCHES.)

COCKAYNE, BOSTON.

with sufficient distinctness for positive identification. There is rude, incised decoration on the upper part of the body.

Vessel No. 85, a bottle 6.2 inches in height, with a graceful body, oblate spheroidal, which, by way of decoration below the neck, bears in relief a symbol the meaning of which is in doubt. A similar bottle is figured by Holmes[1] as coming from Arkansas.

Vessel No. 407, a bowl of very ordinary ware, having two rudely modeled animal heads facing each other on opposite sides (Fig. 30).

Fig. 30.—Vessel No. 407. Rose Mound. (Diam. 8.5 inches.)

Vessel No. 404, a bowl with a modeled animal head projecting upward on one side, in which are small objects that rattle when shaken, has, on the side opposite the head, a tail curling upward. Maximum diameter 9.7 inches.

Vessel No. 562. This bowl (Plate XVII), somewhat similar to one from this same mound in the collection of Peabody Museum, Cambridge, Mass., has interiorly an interesting decoration in red pigment on the background of the ware, consisting of a central swastika indicating the four winds, surrounded by three equidistant stepped designs, or cloud symbols. The exterior of the bowl under description is coated with red pigment. The outer margin of the opening is beaded.

Vessel No. 586, a handsome bottle, oblate-spheroidal as to the body, found in many fragments which since have been carefully cemented together. The decoration of the body consists of ten upright bands of pigment alternately red and white. The base, which is flat, and the neck have solid coatings of red. There are punctate markings around the margin of the neck.

Vessel No. 185. This vessel, one of the "teapot" variety (Plate XVIII), which is found in the United States only in eastern Arkansas and nearby regions (its center of discovery being the eastern part of the Arkansas river valley), differs from the usual form of this kind of vessel in that, instead of having a knob at one side and a spout at the other, the head of an animal takes the place of the knob, and the addition of four feet completes the animal form. It has been suggested by Professor Holmes, who figures[2] a vessel of this class, that the teapot vessel is derived from the animal form, a spout taking the place of a tail. The decoration on the vessel under description consists of partly interlocked scrolls of light pink and of red, on the yellow background of the ware.

Vessel No. 115. This interesting vessel (Fig. 31) is a decided variant from

[1] *Op. cit.*, Plate XIII f.
[2] *Op. cit.*, Plate XL b.

FIG. 31.—Vessel No. 115. Rose Mound. (Diam. of body 8.8 inches.)

A

B

ROSE MOUND, A, VESSEL NO. 127; B, VESSEL NO. 68. (BOTH FULL SIZE.)

COCKAYNE, BOSTON.

others of the variety of the "teapot" type having animal heads and spouts, in that the head (which is better modeled than those of its class usually are) looks inward. We found teapot vessels on only three occasions on St. Francis river—two in the Rose Mound and one at the Forrest Place, which is almost at the mouth of the river.

Vessel No. 127. This bowl (Fig. A, Plate XIX) shows a fish in profile and belongs to a type of vessel, common in the Middle Mississippi region, the St. Francis valley having its full share. The ware is yellow; the exterior has a uniform coating of red pigment. The interior has, by way of decoration, a figure resembling a swastika with an added arm, which may have been introduced for the purpose of filling space.

Vessel No. 68. This little bowl (Fig. B, Plate XIX) is considerably above the average of the pottery of the St. Francis region, being symmetrical in form and having an interior coating of excellent red pigment. The body is decorated with three encircling lines of small nodes, above which is incised decoration.

Mound at Parkin, Cross County.

On the river bank, immediately at the town of Parkin, is a famous aboriginal cemetery belonging to The Northern Ohio Cooperage and Lumber Co., of Parkin, Ark.

About midway on the navigable stream (if we include Little river), the Parkin territory has for years constituted a kind of march to be raided by the pot-hunters of the upper and of the lower river. The principal diggers from above rested not from their labors until Parkin had been visited, while the pot-seekers from below thought not of their journey home until Parkin lay behind them.

After them came the deluge.

The Lumber Company, which later had acquired the property on which the cemetery is, and erected a sawmill nearby, in dull times when the mill was closed, permitted its employes to eke out a livelihood by digging for pots, and this became the avocation of many. Men were actually seen by us at Parkin walking around with sounding-rods in their hands, as elsewhere they might carry canes.

The Parkin Mound, similar in type to the Rose Mound, has a great upper surface, as a rule flat, on which are many humps and rises. According to a rough measurement the sides of the mound are of the following lengths: north, 617 feet; south, 525 feet; east, 938 feet; west, 863 feet. It is surrounded on three sides by depressions whence unquestionably material to make the lower part of it was taken. Subsequently the height of the mound increased by the accumulations due to long occupancy. This made-ground we found to have a depth no greater than 4.5 feet in the various holes sunk by us. The height of the mound above the general level probably is from 3 to 6 feet, though of course it appears considerably greater when viewed from the depressions which partly surround it, or from the river.

There is a pond in the level ground on the northern side of the mound, no doubt caused by the removal of material for its making.

On the western edge of this great mound, on the river bank, is a mound 20 feet in height, on which, doubtless, dwelt the chief who ruled over the great settlement. The diameter of this domiciliary mound was not taken by us, as the base had been greatly impaired in places by the cutting through of a road, and in other parts by the wash of the river.

There are many accounts of discoveries in the Parkin Mound, of earthenware of fantastic forms, and tales related by some of the inhabitants of Parkin descriptive of the pottery found there, show what the Caucasian imagination can do when working in conjunction with that of the African.

No doubt this great site, in times gone by, has yielded vast quantities of pottery, but unquestionably in this site, as in all the other sites on St. Francis river, earthenware of novel designs formed a very small proportion of what was taken from the place.

Much of the work at Parkin, as elsewhere along the St. Francis, had been done by the use of sounding-rods and by subsequent digging of holes of small diameter, down to the pottery when it was discovered. As sounding-rods are often halted by the baked clay of fire-places, and as rods sometimes pass completely through bones and earthenware vessels without meeting with sufficient resistance to indicate their presence, some vessels always remain in sites where search has depended largely on this method. This fact explains why anything was found by us.

The great mound is largely covered at the present time by the small houses of employes of the sawmill and by the gardens and enclosures belonging to these houses, so there remains but comparatively little ground open to investigation.

Nine and one-half hours digging by our force of nine men, wherever an open space was found on the mound, resulted in the discovery of nineteen burials, none more than 26 inches from the surface.

Of these burials fifteen were of adults, three were of adolescents, and one was that of an infant.

All, with three exceptions, lay extended on the back.

One burial was flexed on the left side; another was in a squatting position, the trunk leaning forward, bringing the chin down to the pelvis. The form of burial of the infant was not determined.

Of the nineteen burials, three had been decapitated by former diggers, while in two other cases skulls had been dug down to and the pottery which undoubtedly was with them had been removed.

There were two aboriginal disturbances.

Twenty-five vessels of earthenware rewarded our search, several of which lay apart from burials.

Of these vessels eleven are undecorated bowls and six are bottles which are entirely plain. Two bowls and two bottles have shallow notches on the rim, and one bottle (Fig. 32) has on the body four rudely-modeled human faces in relief, having a seemingly undue development as to the ears. Still another bottle has six

knobs encircling the upper part of the body. One bowl rudely represents a fish in profile, and, finally, one bowl has on two sides conventionalized heads of fish, which are little more than mere projections.

No more than three vessels were found with one burial, and all vessels were in the neighborhood of the skull, except in one case, where a bottle and two bowls lay at the feet of a skeleton. This burial, however, was the one in a squatting

Fig. 32.—Vessel No. 14. Parkin. (Height 6.7 inches.)

position, to which reference has been made, and presumably the feet alone were on the ground when the pottery was deposited.

Mound near Togo, Cross County.

In a cultivated field, on property belonging to Mr. J. G. Wood, of Togo, is a mound somewhat more than a mile in a westerly direction from that place. This mound, at the time of our visit, had a small wooden building upon it, and in the past had served as foundation for a house. The remainder of the mound had been

under cultivation, and presumably has been much spread, as the cultivated part is considerably lower than that upon which the house had been.

The present height of the mound is 5 feet. The basal area is very irregular—a diameter of one hundred feet may be considered approximate.

As mounds in this region are not supposed to be destroyed by investigators, our search was confined to a large number of trial-holes, which came upon five burials: three of children and two of adults. Of the adults, one lay extended on the back; the other, at full length on the right side.

Fig. 33.—Vessel No. 4. Togo. (Height 7 inches.)

With one child was a small pot with loop-handles; with another, a pot and a bowl, both undecorated. With the remaining child was Vessel No. 4 (Fig. 33), a bottle of compound form representing a bottle standing in a bowl. On four sides around the body, below the base of the neck, are human heads rudely modeled in relief.

With one of the adult burials was an undecorated bowl; and alone in the

mound was a rude pot. All earthenware vessels with burials at this place were in the neighborhood of the skulls.

Apparently this mound has lost many burials during its cultivation. Moreover, a prominent trader in pottery is said to have worked successfully at the place.

The Jones and Borum Places, Cross County.

About two miles above Togo, but on the opposite side of the river, are two adjoining places, one belonging to Dr. C. C. Borum, of Earle, Ark., extending to the water's edge, the other, the property of Mrs. J. W. Jones, of Jamestown, Ark., lying back of the Borum Place.

Passing through woods belonging to the Borum Place, one reaches the cultivated ground belonging to the two properties, on part of which are many rises and ridges, with a symmetrical mound, 8 feet high and 50 feet across the base, centrally placed. Much of the high ground belonging to these places is artificial, being the slow accumulation of long periods of aboriginal occupancy.

Digging was done by us in a tentative way over the principal high places throughout, and in such places as yielded returns we conducted work as extensive as is permissible in bottom land where mounds may not be permanently interfered with.

Burials were found almost everywhere in the higher ground, but interments had been made singly or perhaps two or three near together, and not in groups.

At this place also traces of the work of others were met with, and it was evident that digging had been carried on here to a considerable extent.

Forty-eight burials were found by us at these places, of which sixteen were of adults; twenty-five were of infants or of older children; two, of adolescents. Four were disturbances, aboriginal or modern. One burial is not particularly described in our note-book.

The form of burial, when determined (with the exception of that of an adult which was partly flexed on the right side), was at full length on the back.

But few artifacts except pottery lay with burials. Under an inverted vessel with the skeleton of an infant, was a small arrowhead of flint.

Burial No. 17, an adult, had at the skull two bottles, one of which had a neck which, broken in aboriginal times, had been neatly smoothed around to remove the rough surface of the break. Across the skull were fragments of sheet-copper, while shell beads were at the top of the head as if possibly they had been connected with the copper ornament. At both wrists were beads of shell.

An adult skeleton had a mass of red clay lying at the left wrist.

The skeleton of a child had at the skull a bottle and a bowl. In the latter vessel was a rudely pitted discoidal stone.

Burial No. 40, a child, which lay 40 inches below the surface (as deep as any burial at the Jones and Borum places), had with it a bottle and a bowl. Shell beads were at the neck, with which was a marine shell, a young *Fulgur perversum*, perforated at the beak.

Shell beads of ordinary form, in addition to those already noted, lay with two other burials.

Apart from burials were: four pipes of earthenware, all coarsely made and none presenting any distinctive feature; a piercing implement of bone with the articular part remaining; a small dumb-bell shaped object of earthenware, probably an ear-plug; two spheres of clay, each about an inch in diameter, resembling our "marbles" and probably used in a game, like those found in the stone-graves of Tennessee;[1] one small, imperforate disk of earthenware, modeled from clay and not shaped from a fragment of a vessel; a similar disk, only larger, and having a central hole; a perforated disk wrought from a fragment of pottery; a cone of half-fired clay, found in a fire-place; two small earthenware columns similar to those from the mound on the Rose Place but more thoroughly fired.

Ninety-two vessels came from the Jones and Borum places, all but three or four associated with burials and as a rule lying near the skulls. In three instances skulls rested directly in large bowls; and in one case on, and partly in, a bowl that was too small to receive the entire head.

In the cemetery at this place, which, like other places of burial along the St. Francis, contained so much pottery of mediocre interest, it was a genuine relief to come upon Burial No. 14, that of a child, having at the neck a few spool-shaped beads of shell; at the shoulder a fine effigy vessel which will be particularly described later in this account, and a small bowl coated with red paint inside and out and having two holes on each side for suspension. Near these vessels, upright, were two small bottles, one inverted in the opening of the other.

The vessels of this place, many of which were not in a condition to preserve, did not, as a rule, present features of interest. But four had decoration with pigment, in each instance consisting of a uniform coating of red. Descriptions of the more interesting vessels from the Jones and Borum places, follow.

Vessel No. 22. This fine human effigy figure, of yellow ware (Plate XX), presumably has had a coating of red pigment over the entire surface, though much of this coating is now missing. The ears show the same form of piercing as do the well-known head vessels which we have already described. Effigy vessels are occasionally found on St. Francis river, but are not numerous there, though more abundant than in the lower Mississippi region. Vessels modeled after the human form seem to be most abundantly found in southern Missouri and in Tennessee. In describing the effigy figure from the Bonner Place reference has been made to the variety of effigy vessels figured in General Thruston's "Antiquities of Tennessee." A number from Missouri are shown in "Archæology of Missouri," by Dr. Edward Evers.

Vessel No. 64. A bottle of inferior, yellow ware (Fig. 34), having a body formed of three compartments connected interiorly.

[1] Gates P. Thruston. "Antiquities of Tennessee," 2d ed., p. 164.

JONES AND BORUM PLACES, VESSEL NO. 22. (HEIGHT, 8.7 INCHES.)

COCKAYNE, BOSTON.

MOUNDS AND CEMETERY AT NEELEY'S FERRY, CROSS COUNTY.

At Neeley's Ferry is the plantation of Mr. Starland W. Wood, of Earle, Ark., which is known as the Starwood Place in contradistinction to that of Mr. J. G. Wood, of Togo, of whom we already have had occasion to speak.

The Starwood Place for years has been famous for the number of antiquities found there, and in consequence it has been for an equal period a Mecca for collectors and for dealers in aboriginal pottery, who have been far from idle while visiting the place.

About eighty acres are said to be under cultivation at the Starwood Place, much of which consists of ridges and of rising ground, including several irregular mounds, all of which, no doubt, had their origin through long-continued aboriginal occupancy.

The principal mound at this place, near the river bank, is 18 feet in height, measured from the road on the west. The mound has suffered to such an extent by the making of this road (which partly surrounds its base) and through wash of water, that a statement as to the present diameter of the mound would be misleading.

Owing to its use as a place of burial in recent times, but little digging in this mound was attempted by us. We found in it, however, one burial with shell beads at the neck and ear-plugs of shell near the skull.

FIG. 34.—Vessel No. 64. Jones Place. (Height 6.25 inches.)

Over all the surface of the cultivated ground at the Starwood Place (and the entire place is under cultivation except the upper parts of two mounds) are fragments of bones, human and of lower animals, and innumerable bits of pottery and other debris from dwelling-sites.

Evidently many burials and their accompanying artifacts have been destroyed at this place during years of cultivation, while the work of curiosity seekers was too often evident throughout our investigation.

The very size of this site stood in the way of a thorough search, for, as was evident, the aborigines had lived over most of it and had buried beneath their dwellings and not in any particular spot.

Digging was done by us in all places that seemingly offered promise of reward (except in considerable areas devoted to the cultivation of alfalfa and where build-

ings were), and burials were found in all such places, even in the barnyard and under the stable, sometimes scattered, sometimes a few together, in one instance the remains of four children, separate but within the limits of a single trial-hole somewhat enlarged.

At the Starwood Place, as elsewhere, was noted the growth of the site above the earlier burials. For instance, the skeleton of an infant lay just 5 feet below the surface. Sixteen inches above this burial was a great fire-place of burnt clay, the hard material being somewhat convex at the under surface. Above this fire-place was a thin stratum of clay and then another fire-place. Above this latter fire-place was a stratum of clay surmounted by a layer of clay and charcoal combined. Finally, there was a thick stratum of clay extending to the present surface of the ground. All these strata were unbroken and had their origin after the time of the burial.

It is not at all likely that the first fire-place above the burial of the child had any connection with it, inasmuch as other burials on the place were not found immediately beneath the fire-places, and moreover, the thickness of the baked clay of the fire-place and its extent, argued a more long-continued fire and a larger one than would have been accorded a single burial.

Presumably a large fire-place for culinary purposes had been made by scooping out a certain amount of soil (hence the convex lower surface of the baked clay), and the presence of the skeleton of the child beneath was purely an accident.

Ninety-five interments were encountered by us at the Starwood Place, of which fifty-three were of adults, thirty-nine were of infants or of older children, and three were of adolescents. Included in these burials were several aboriginal disturbances.

We omit from the enumeration a number of recent disturbances where parts of burials had been cut to pieces by seekers after pottery.

With the exception of the aboriginal disturbances, and of some of the children's burials which could not be determined, all interments encountered by us at the Starwood Place were at full length on the back with two exceptions, to which we shall refer later.

Three of the extended burials had the legs crossed at the ankles; one, at the knees; one, the thighs crossed above the knees.

Of the two burials spoken of as exceptions to the form prevailing at Neeley's Ferry, one lay at full length, face down, while the other cannot be proved to be the burial of a human being, though it seems to us most probable that it was so, and hence we have included it in our list of burials from this place.

In a little heap were finely burnt bone-dust and a few small fragments of calcined bone, much smaller than such fragments left after aboriginal cremation usually are. If the cremation included the entire skeleton of an adult, the work had been very thoroughly performed. Probably the ashes were what was left from the incineration of a child. This little pile of burnt bones lay partly covered with an inverted bowl, on the base of which, standing upright, was a bottle. This whole deposit lay at the feet of a skeleton.

With the exception of pottery, objects placed with the dead at this place were unimportant. In one vessel were a number of flint chips and one flint pebble; under another vessel lay a small flint arrowhead.

Burial No. 13, in addition to a bowl and a bottle, had, in a little pile, a large number of pharyngeal teeth of the fresh-water drum-fish, which Prof. F. A. Lucas kindly identified for us.

At the right of the skull of Burial No. 14 was a pot containing a number of bones of a small fish. Under the right shoulder was a bottle; and under the right elbow, a bowl inverted over one dumb-bell shaped shell bead, a large bone bead, and many fragments of small dumb-bell shaped objects of half-fired clay.

FIG. 35.—Pipe of earthenware. With Burial No. 31. Neeley's Ferry. (Full size.)

With Burial No. 31, an adult, were at the skull, a bowl, a bottle, and an earthenware pipe (Fig. 35) having hardly more than rudimentary supports projecting from the base of its bowl.

With Burial No. 48, a child, was a marine shell, a young *Fulgur perversum*, perforated at the beak.

With eight burials were shell beads, a few to each burial, nearly all badly decayed. With two of the burials having beads of shell, both of children, were in one instance, the canine tooth of a bear, perforated for suspension at the proximal end; and in the other (Burial No. 98), a gorget of shell shaped to resemble a turtle (Fig. 36) and having an interesting perforation for attachment, namely, where the hole enters and leaves the ornament on the same side. We had occasion to speak of this form in connection with two objects from the Rose Mound.

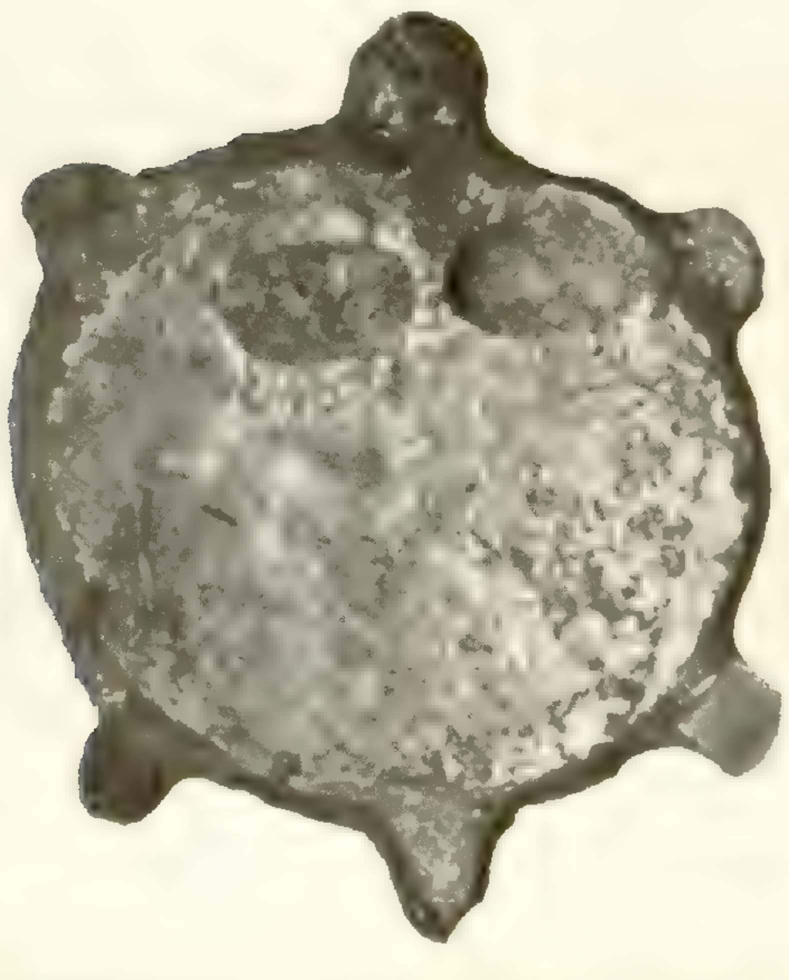


FIG. 36.—Ornament of shell, representing a turtle. With Burial No. 98. Neeley's Ferry. (Full size.)

Each of two burials had an ear-plug of shell. Presumably the mates to these escaped our search or had been lost through previous disturbance.

One burial had a pair of shell ear-plugs, and two interments had each a gorget of shell, decayed and broken beyond restoration.

With one burial was a small bead of sheet-metal, decayed through and through, coated with carbonate of copper, and having bones near it, colored green as if other beads had disappeared leaving only this trace behind.

With the skeleton of an infant were two ear-plugs of earthenware, and the burial of a child had a chisel made from a quartz pebble, lying below two bowls.

There were found also, though not in connection with human remains, five disks made from fragments of pottery vessels, each with a central perforation, and one disk of the same material having two holes; a piercing implement of bone and a bone implement having a rounded point; six bone piercing implements with the articular parts remaining; a tubular bead of bone; two small arrowheads of flint; two ear-plugs of pottery, of the type resembling a short, blunt pin,—found separately,—one decorated as to the upper surface of the head, with numerous imprints of a pointed implement; a flat pebble neatly worked to form a chisel, the sides originally curved, having been squared; three small "celts" respectively of quartz, silicious limestone, and dark-green silicious rock; a pipe of earthenware, coarsely modeled, showing a frog in relief (Fig. 37).

FIG. 37.—Pipe of earthenware. Neeley's Ferry. (Full size.)

There were found also, in each instance near a fireplace, three cones of half-fired clay of a type similar to that referred to in connection with objects found by us at the Rose Mound. One of the cones from the Neeley's Ferry site is 6.5 inches in height with a basal diameter of 5 inches. Extending downward from the apex is a circular hole 2.5 inches deep and somewhat more than half an inch in diameter. The second of these cones resembles the first, but the third has three holes, one on top, like the others, but with the addition of two shallow ones on opposite sides somewhat below the apex.

One hundred and seventy-five vessels of earthenware, broken and whole, many hopelessly crushed, were found by us at this place. Of the vessels recovered seventy-one were left with Mr. Wood, the owner of the property, who is interested in archæological research.

A considerable number of burials at this place were without artifacts of any

FIG. 38.—Vessel No. 61. Neeley's Ferry. (Height 8.5 inches.)

sort; others had numerous vessels, eight being found with the skeleton of a child. As is usually the case in aboriginal cemeteries, vessels lay near the skulls, but were found exceptionally at all parts of the skeleton, as for instance, in the case of the skeleton of an adult extended on the back (Burial No. 18), where single vessels lay over the left hand, the upper part of the left thigh, the left knee, the left ankle, and over the feet.

The more interesting vessels from this place will now be described in detail.

Vessel No. 61. An effigy bottle (Fig. 38) representing a human figure having the legs extending back across the base of the vessel.

Vessel No. 115. A bottle with short and comparatively wide neck (Fig. 39), being, in our opinion, a highly conventionalized fish-form. The tail and the dorsal and ventral fins are indicated, while the details of the head are dispensed with. This omission of the head from conventionalized animal forms is occasionally found along the St. Francis.

Fig. 39.—Vessel No. 115. Neeley's Ferry. (Diam. 6.5 inches.)

Vessel No. 118. A bowl of yellow ware, with maximum diameter of 10.3 inches and a height of 4 inches, having by way of decoration interiorly, in red, a cross of the four directions, with spaces between the arms occupied by terraced designs

representing clouds. On the upper part of the outside of the vessel are four cloud symbols similar to those on the inside. Extending horizontally from four equidistant points on the rim are small projections centrally notched on the margins, conventionalized heads or tails of fish.

Fig. 40.—Vessel No. 2. Neeley's Ferry. (Diam. 6.25 inches.)

Vessel No. 2. This vessel (Fig. 40), representing a frog (a common type in the Middle Mississippi region), is shown here only because the modeling differs from that usually found on similar vessels from this region, in that the legs are more massive and the relief is higher. Moreover, the legs do not seem to have been modeled separately and impressed upon the body of the vessel, as is the case with so many vessels of this kind. It is impossible, however, to determine just

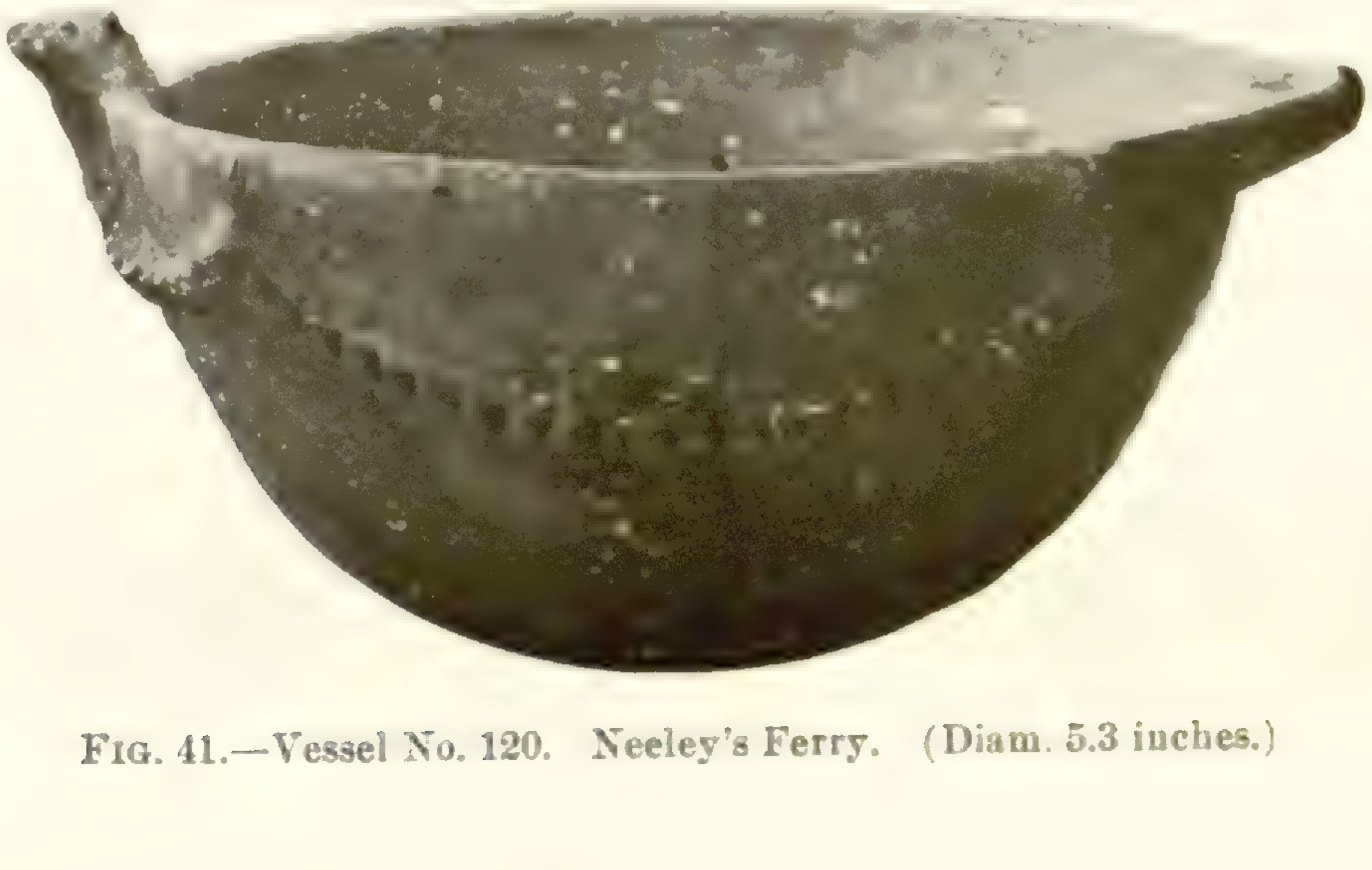


Fig. 41.—Vessel No. 120. Neeley's Ferry. (Diam. 5.3 inches.)

FIG. 42.—Vessel No. 58. Neeley's Ferry. (Height 6.7 inches.)

FIG. 43.—Vessel No. 30. Neeley's Ferry. (Height 6.4 inches.)

how the legs were made. If they were *repoussé*, as the head is, the spaces inside have been carefully filled and show no hollows, though one is present at the head.

Vessel No. 102. A bottle of ordinary dark ware, having a kind of collar in relief below the neck, and three rounded feet at the base, forming a tripod support. Apparently these feet were added after the bottle was otherwise complete, as holes have been roughly knocked in the base of the bottle where the feet join the body to enable the feet, which are hollow, to share in the holding capacity of the vessel.

Vessel No. 120. An interesting little bowl (Fig. 41), having on one side an animal head, and a conventionalized tail on the opposite side. Fore and hind legs appear on the vessel; these are connected on each side by a festooned band in relief, on which are notches.

Vessel No. 58. A bottle of compound form (Fig. 42) representing a bottle placed in a bowl which rather rudely represents a frog. The ware is most inferior.

Vessel No. 30. A bottle, shown in Fig. 43, having a neck leaving the bottle on opposite sides and joining above, a type well known in the Middle Mississippi region and elsewhere. This bottle is shown here not because it presents any novel feature, but for the reason that it is a good example of the asymmetry which to such a marked extent characterizes the vessels of the St. Francis region. We have said so much of the "lop-sidedness" of these vessels and have shown so few of them in this report that it seemed to us that an example might reinforce our statements on the subject.

Catfish Mounds, Cross County.

On the right bank of the river, on property of Mr. R. R. Rodgers, of Smithdale, Ark., is a cultivated field about ten acres in extent, surrounded by forest except on the river side. The field is covered with humps of artificial formation, the largest about 5 feet in height and 75 feet across the base. A circular depression, dry at the time of our visit, is at the northwestern side of the mound, while a short distance to the eastward is another depression, circular and filled with water when we were there. Similar humps and pools occur in numbers in the surrounding woods. This place is known as the Catfish Mounds.

Comparatively few signs of early occupancy were on the surface of the field, though fragments of flint and bits of pottery were noticed here and there, and the burnt clay usually present on aboriginal sites lay scattered around. There is little history of the discovery of aboriginal objects at this place, but as few persons live nearby, and as none of these has been there a long time, it is likely that former diggers got their full share without those at present on the spot having heard anything of it.

The principal mound was as thoroughly examined as is permissible in a region subject to overflow, where mounds are a valuable asset, nine trial-holes having been put down and all subsequently greatly enlarged.

Two burials were found, adults at full length on the back. With them were four pottery vessels, three of ordinary shape and undecorated, the fourth a bottle standing on a tripod support.

Various other humps in the field were examined, as were a number of others nearby in the woods. But two burials were found: that of a child and indications of a full-length burial much decayed. With these were two undecorated vessels, and two other vessels also without decoration were found apart from bones.

It is our belief that the field, which is a comparatively small one, has been almost deprived of relics by former diggers and by long-continued cultivation.

A part of a day spent by us among humps and mounds in woods some distance back of the Catfish Mounds was without success.

Mounds above Turkey Island, Cross County.

On the eastern side of the river, about 200 yards above Turkey Island, in woods, is a group of low, irregular mounds and rises, beginning immediately on the river's bank and extending a short distance inland. Our estimate was that the site covered about seven acres.

These various rises of the ground, all artificial as their composition testified, had been subjected to the usual onslaught from seekers after pottery in former years, and in consequence were pitted in every direction. The elevation farthest up stream (the most northerly of the various rises) was on ground sloping toward the water, so that, on the river side, the mound appeared much higher than the artificial part of it really was. A measurement taken when the mound was in course of total demolition by us, from the summit to the base, showed the artificial elevation to be 5 feet in height. The diameter of the circular base was about 35 feet. This was the most symmetrical mound on the site.

Two days with nine men to dig were devoted by us to this mound. During this time forty-two burials were encountered, as follows:

Adults	25
Adolescents	3
Children	12
Not determined	2

Of the undetermined burials, one consisted of small fragments of bone surrounded by the roots of a large tree, which apparently had absorbed the bony material to a large extent. Presumably, however, the burial was that of a child.

Of the other undetermined burial particulars are wanting in our notes.

With the exception of remains of small children, whose form of burial was not determinable, all burials but one were extended on the back. This exception, Burial No. 28, consisted of calcined fragments of human bones, evidently adult, deposited in a mass 11 inches by 14 inches by 5 inches thick. A bowl had been placed with this burial.

Included among the adult burials are two aboriginal disturbances and three recent disturbances. Recent disturbances at this place consisted of beheaded skeletons where former visitors, having reached the skull or the accompanying pottery by the aid of sounding-rods, had dug down to remove the earthenware.

During the digging were found, apart from burials: a canine tooth of a bear, perforated for suspension; a small "celt"; two mussel-shell hoes, one *Quadrula heros*, the other somewhat broken; two piercing implements of bone; an object about 3 inches long made from half of a hollow bone, probably of a bird; three of the pillar-shaped supports of pottery, similar to ones found elsewhere along the river.

Exclusive of pottery there were with burials: fragments of sheet-copper in three instances (that with Burial No. 35, analyzed by Dr. H. F. Keller, proving, as we have stated elsewhere, to be a purely aboriginal product); three antler-points found together; two shell beads; three shell beads and two shell ear-plugs; the scapula of a Virginia deer, perforated at the side and at the end in a manner to make the holes meet at right angles.

Sixty-three earthenware vessels came from this mound, four being the greatest number with any one burial. Red pigment had been used on but one vessel, a bowl having a uniform coating inside and out.

The general character of the vessels was the same as that commonly found on the St. Francis, being as a rule without decoration. One bottle, originally mounted on a tripod, showed where the legs having broken, the base of the vessel had been smoothed to allow its continued use. A small bottle, also with tripod support, had been intended to have a spherical body, which, however, was flattened on one side as if the vessel, while still in a plastic state, had been placed on its side in a way to impair its roundness of outline, and in that condition had been fired.

Somewhat more than three additional days were devoted to the remainder of our digging near Turkey Island.

There seemed to have been no general place of burial at the aboriginal settlement other than the mound we have described. Burials had been scattered and were comparatively few, even making allowance for those which had been disturbed before our coming.

Apart from the mound, fifty-two burials were encountered, as follows:

Adults	21
Adolescents	4
Children, including infants	25
Not determined	2

Of the last two burials one had been almost absorbed by the roots of a large tree and the other was a deposit of calcined bones, about 1 foot in diameter and 3 inches thick. The bones had been so reduced by the action of fire that it was not possible to say with certainty if they were human or not, but as deposits of this kind in aboriginal sites almost invariably are of human bones, we have included this one in our enumeration.

The form of burial was at full length on the back, with the possible exception of remains of several infants, as to which we were unable to determine, and the remains of an older child and of an adolescent, both of which burials lay flexed to

the right. Two other burials, namely, that in the roots of the tree and the calcined deposit, of course, are excepted also. The deepest burial among those outside the mound was somewhat more than 4 feet down, but the burial originally had not been of this depth, as it lay beneath unbroken strata which had formed after the time of the burial.

Lying apart from burials in the various sites outside the mound were: a perforated disk made from a fragment of a pottery vessel; two chisels wrought from pebbles of flint; a small "celt" of disintegrating sandstone; a discoidal stone; a cone of half-fired clay, 6 inches in height and 4.5 inches in basal diameter, having two holes opposite each other about two inches above the base; an ellipsoidal object of earthenware with a shallow groove around the middle, slightly ridged longitudinally, 3.75 inches long, 2.5 inches maximum diameter. Objects much resembling this one are figured by Professor Holmes[1] as having been for use in slings among California aborigines.

There were also found singly, in the various sites, four pipes of earthenware, one of which is shown in Fig. 44.

FIG. 44.—Pipe of earthenware. Mounds near Turkey Island. (Full size.)

Apart from any burial was an earthenware pot containing seventeen decaying mussel-shells, arranged side by side on edge, five of which had been perforated for use as hoes. Other hoes and mussel-shells were found during the digging.

The following burials had accompanying artifacts other than pottery:

Burial No. 69, a child, had a shell gorget (Fig. 45) of the type representing a human face, and somewhat similar to the one already described and figured in the account of the Rose Mound. This gorget lay on the right side of the thorax, the engraved side down. A bowl also had been placed with this burial.

[1] William H. Holmes. Report U. S. Nat. Museum for 1900, Plate XXVI.

Burial No. 72, a child, had two vessels at the head and two shell beads at the neck.

Burial No. 77, an adolescent, had a bowl at the left side of the skull with a bottle lying on its side upon it. At the neck were a number of shell beads; at each ear was an ear-plug of shell of the blunt pin type, the head directed to the front.

FIG. 45.—Gorget of shell. With Burial No. 69. Mounds near Turkey Island. (Full size.)

Burial No. 82, an adult, had two masses of red pigment, oxide of iron, one at the right side of the pelvis, over the lower part of the forearm; the other on the lower part of the humerus, which, together with the radius and the ulna, was dyed a brilliant red. Slightly beyond the skull were a bottle and a bowl, having between them a mass of scarlet pigment.

Burial No. 86, a child, lay with two bowls near the skull. On the chest was a shell gorget in many disintegrating fragments.

Burial No. 88, an adult, with two bottles near the head, had a number of shell beads at the neck and two at the pelvis.

Crossing and fitting to the curve of the upper part of the frontal bone was a band of copper about 7 inches long and .8 inch in maximum width, tapering somewhat toward the extremities. In one place the sheet-copper forming this band had

been joined together probably by tying, as four holes are present, but no rivets. On the inner surface of the sheet-metal ornament was a band of split cane, much of which still remains. This cane formed part of the ornament, as is shown by the fact that single perforations at each end of the ornament, no doubt for attachment, pass through the cane also. On the upper part of the ornament is matting which, no doubt, is part of the covering of the entire burial, locally preserved by the salts of copper. The skull below this ornament is colored green.

Burial No. 90, an infant, had beads at the neck, and a shell gorget representing the human face, but inferior to the one figured previously as coming from this place.

Exclusive of the pottery taken from the mound, eighty-two vessels of earthenware came from the sites near Turkey Island. Among these are four vessels formerly having had tripod supports, but from which these supports having been broken off, the area of contact with the body of the vessel had been carefully smoothed.

FIG. 46.—With Burial No. 94 (an infant). Mounds near Turkey Island. (Full size.)

Six of the eighty-two vessels bore decoration with red pigment. Three of these, with a uniform coating of red, were respectively a bowl from which an animal head had been broken, but on which the tail remained, and two wholly asymmetri-

MOUNDS NEAR TURKEY ISLAND, VESSEL NO. 125. (HEIGHT, 7.2 INCHES.)

COCKAYNE, BOSTON.

MOUNDS NEAR TURKEY ISLAND, VESSEL NO. 117. (HEIGHT, 7.7 INCHES.)

cal bottles. The three remaining vessels had designs in red. Two of these will be particularly described, and figured in the plates, in connection with this place; the third, a rough, heavy bottle with a circular, flaring base, has the paint scaled from it to such an extent that the design is greatly impaired.

The following burials present features of interest in connection with the arrangement of vessels.

Burial No. 52, an adult skeleton, had near the head an upright bottle, over the neck of which a bowl had been turned so that the neck was entirely covered, the rim of the bowl resting on the body of the bottle. Another bowl was nearby.

Burial No. 71, an adolescent, had an inverted bowl partly covering the skull and giving to the burial the appearance of a certain form of urn-burial. Upon examination, however, it became apparent that this position of the vessel was incidental and that the bowl had been inverted to cover a smaller bowl which had been placed upon the skull.

Burial No. 94, a very young infant, had near it a small bowl in which, upright, was a little effigy bottle. The bowl and the bottle are shown in Fig. 46, in which, however, the bowl has been tilted slightly from the upright position in which it was found, in order to give a better view of the bottle.

We shall now describe certain vessels from the aboriginal site near Turkey Island.

Vessel No. 125. This bottle (Plate XXI) has four equidistant bands of red pigment running vertically on the body. The background is a coating of gray clay. Around the neck are two circles of red pigment.

Vessel No. 15. A bottle of coarse ware (Fig. 47), of a fairly common type in the region, having a collar modeled around the neck, and a tripod support.

Fig. 47.—Vessel No. 15. Mounds near Turkey Island. (Height 10 inches.)

Vessel No. 84. A clumsily made, asymmetrical bottle, 8 inches in height, having a body formed from three lobes, and an annular, projecting base or foot.

Vessel No. 117. This bottle (Plate XXII), of yellow ware, has had, as a background for a design in red pigment, a coating of light gray clay. The design consists of a four-pointed star, the extremi-

ties directed downward from the base of the neck, and a similar figure with the arms pointing upward from the base of the vessel. Around the body is a design seemingly based on the swastika, four times shown, with a modification in one instance where the figure has five arms, this fifth arm connecting with one of the points of the upper star. The decoration on the neck seems to consist of a zigzag of gray pigment running between series of triangles in red.

Mounds near Log Landing, Cross County.

Near the river bank, at a log landing, the name of which, if it has one, we did not learn, on the western side of the river, are three low mounds, one of which is crossed by teams hauling timber, and another is partly traversed by the road. In these two mounds but little digging was done, owing to our wish to avoid injuring roads over which heavy loads must pass.

Digging in one of the mounds and in part of another resulted in the discovery of four burials of adults, all extended on the back. With each of these burials, near the skull, were a bottle and a bowl, all undecorated with the exception of one bowl which had loop-handles, and on the body rude imprints probably of a section of a reed.

Fortune Mounds, Cross County.[1]

The Fortune Mounds, as the place is called, the property of Mr. W. S. James, of Bay Village, Ark., consist of ridges of the ground and one flat mound on the river bank of the type with which the reader is familiar. This mound, presumably quadrangular in the past, is now of irregular outline through wash of water. Its area is probably about two acres. The height of the mound varies greatly. The upper surface, which is strewn with dwelling-site debris, slopes slightly downward toward the northern, or river, side. The other sides have suffered to such an extent through wash, and so much surrounding soil has been carried away by the river, that the height of the mound varies at almost every part. Probably originally its altitude did not exceed 6 or 7 feet.

This place bears a great reputation for the discovery of human skeletons and accompanying pottery in the past, and evidently it had been most persistently sounded and dug previous to our coming. It was from here that the head vessel in Peabody Museum, Cambridge, Mass., was taken.

Considerable digging on our part resulted in the discovery of one skeleton at full length, having an undecorated vessel at the head.

The Turnbow Place, Cross County.

About one-quarter mile in from the river is a tract of cultivated ground, about fifty acres in extent, known as the Turnbow Place, and belonging to Mr. W. N. Turnbow, who resides upon it. Part of this place is made up of a number of ridges and high places, and is similar to other aboriginal sites along St. Francis river. Most of the elevated ground at this place, however, had little superficial sign of

[1] This place was in Poinsett County until a part of that county, including the Fortune Mounds, was taken to complete Cross County.

former occupancy, and digging in these parts did not indicate a great depth of midden deposit.

The westernmost elevation, however, a ridge about 6 feet high and 125 feet by 225 feet in extent, had over the surface bits of pottery and fragments of human bones, and Mr. Turnbow told of burials that had been uncovered there by the plow.

Eighteen trial-holes in this ridge came upon only a single burial, with an undecorated bottle at the skull.

It is probable that this ridge, which the owner informed us had been under cultivation for more than forty years, had, in the course of time, yielded to the plow, and perhaps to curiosity hunters, most of the burials it once contained.

Mound on the Lindsay Place, Poinsett County.

The Lindsay Place, which has been recently cleared of timber, belongs to Mr. J. W. Lindsay, who lives upon it. A short distance from the landing, in a cultivated field and near the road which borders the river, is a flat mound about 3 feet in height and 30 feet in diameter.

Eight out of nine trial-holes in this mound reached raw clay containing no mixture of midden-refuse, when at a short distance from the surface. The ninth hole, when about 16 inches down, came upon a large fireplace marked by clay burnt almost to the hardness of brick. This clay in places had a maximum thickness of about 4 inches.

The bed of burnt clay had upon it, in one place, a layer gray in color, composed of ashes with a slight admixture of clay. This deposit, irregular in outline, was about 2 feet square, roughly speaking. Its maximum thickness was about 5 inches, though the deposit became much thinner toward the edges. This deposit of ashes did not cover the fireplace, but was found on it only in one place.

Just beside the deposit, but not in it, resting on the fireplace in an upright position, was a pot having the lower two-thirds filled with very dark clay and fragments of the cremated bones of a child—a cremation which had been thoroughly done, compared with many aboriginal ones, as the major part of the deposit was hardly more than powder, while the larger fragments were less than an inch in diameter and were exceptional.

The upper third of the vessel was filled with the ordinary clay from the mound, and the part below, much darker than the clay above, presumably was made up of a mixture of the cremated bones, ashes, small fragments of burnt clay from the fireplace, and a slight infiltration of clay from above.

Beside this urn-burial were the fragments of a bowl.

Considerable digging was done in connection with this burial to discover whether other burials had been made in its vicinity, but none was encountered.

We are unable to determine if the fireplace in this mound was simply one similar to so many fireplaces found in this region, where the aborigines have lived, and the urn-burial was placed upon it merely by accident, or if the fireplace marked the site of the cremation, and the fireplace and the mound itself were made expressly for the one burial.

Cemetery on the Cummings Place, Poinsett County.

The Cummings Place, belonging to Mr. C. C. Cummings, who resides on the plantation and at Marked Tree, has at the landing considerable high ground of artificial origin, through which a road has been cut, and on which is Mr. Cummings' home and also a large barn and various other outbuildings, and an enclosure for stock, in which a building formerly stood.

The Cummings Place has been long famous for the aboriginal pottery found there, and we were informed that a person whom we knew to be a prominent vendor of aboriginal relics, and to have passed many years on St. Francis river in pursuit of his vocation, had spent much time at that place and had gathered an abundant harvest there.

Our successful digging at the Cummings Place was done in that part of the enclosure where a house had been at the time of the visit of the person to whom we have referred, and also in an extension of the raised ground, about 40 by 75 feet in size, immediately across a fence bordering the northern side of the enclosure.

Our work, which consisted of digging here and there and enlarging the holes when burials were encountered, resulted in the discovery of forty interments and of sixty-six vessels of earthenware, nearly all of which were with the burials.

Of the forty burials, thirty-one were of adults; five, of children; two, of adolescents; and two were aboriginal disturbances. One of these latter, Burial No. 15, was interesting in that the legs showed marked disparity of development, the individual in life having been decidedly lame.

With the exception of the burials of two or three children (the form of which was not determined) and of one burial which lay at full length face down, all interments from the Cummings Place were extended on the back, with three slight variations, as follows:

1. The right leg crossing above the left knee.
2. Trunk on back, thighs flexed upward with legs partly flexed on the thighs.
3. The left ankle crossed over the right one.

Three skeletons lay with the skulls resting in bowls.

While pottery lay with nearly all the burials found, but few other artifacts had been placed with them. With a child's skeleton were five beads of shell; an earthenware pipe of ordinary type lay near the burial of an adult.

With Burial No. 36 was an earthenware bottle at the skull, and at each side of the cranium, an ear-plug of shell of the type having the shank made from the penultimate whorl of the *Fulgur* (conch shell) and the mushroom-shaped head from parts of the shell on each side of the suture. On page 295 of our "Certain Aboriginal Remains of the Alabama River" we figure a shell and show exactly from what parts ornaments of this kind were cut.[1] This form of ornament often has been considered a pin, but as we have frequently found such ornaments at each side of the head at the ears, some with grooves just back of the heads

[1] The same type of ornament is figured by Professor Holmes in "Art in Shell," Plate XXX, fig. 10.

CUMMINGS PLACE, VESSEL NO. 59. (HEIGHT, 7.9 INCHES.)
SERPENT EXTENDED. (ABOUT TWO-THIRDS SIZE.)

COCKAYNE, BOSTON

of the ornaments and some with perforations in the ends for attachment, we are strongly inclined to consider them ear-plugs.

Burial No. 11, the skeleton of a child, had at the neck three marine shells (*Oliva literata*), cut to permit stringing as beads; one shell bead at the right wrist; a mussel-shell hoe above the pelvis; slightly to the left of the pelvis a small bowl and a bottle, and an undecorated pot in which was a small bone. With these vessels was a rudely modeled head that belonged to a vessel not present with the rest. Three shell beads were at the ankles.

With a few disturbed bones not recorded as a burial, were two fragments of sheet-copper; some shell beads; a number of pillar-shaped supports for receptacles, lying in a mass together, similar to others we have referred to with the exception that these, while modeled, had not been fired.

Scattered through the debris at this place were the usual piercing implements of bone, and disks made from fragments of pottery vessels, some perforated, and some not; also one perforated earthenware disk about 2 inches in diameter, which had been shaped and fired.

There were found also several small arrowheads of flint; a diminutive ear-plug of earthenware, coated with red pigment; several antler-points, cut squarely off, and in several instances having a boring in the proximal end, which, however, was not of sufficient size to have chambered the shaft of an arrow.

One earthenware pipe and part of another one, both of ordinary type, were found apart from burials.

The sixty-six vessels found by us, broken and whole, were in the main undecorated and of ordinary forms. As a rule, earthenware lay near the skulls, but no burial had more than four vessels.

The use of red paint was six times noted on the pottery at this place, three times in uniform coating.

The order of arrangement of vessels at the Cummings Place presented no new feature. In one instance a small bowl, erect, was completely covered with the inverted base of a large vessel that had been broken into a circular form for the purpose.

Mussel-shells, usually badly decayed, were present in some of the vessels, as was one shell spoon in fragments.

In one vessel were many decaying fish bones.

The thrifty natives who formerly inhabited the Cummings Place had been quick to utilize broken vessels for interment with the dead. In no fewer than four instances there, where interesting vessels were found, important parts were missing, though in three cases (as in the case of broken feet) the area of fracture had been smoothed to render the vessel efficient.

We shall now describe the more interesting vessels from the Cummings Place.

Vessel No. 59. This bottle, shown in Plate XXIII, is of yellow ware, having on the body in red pigment, as decoration, an arrangement based on the *triskele*, much in the manner of many of the swastika designs from St. Francis river.

Around the neck, also in red pigment, is a serpent which is shown extended on the same plate with the bottle. To any one familiar with the markings on the diamond-back rattlesnake (*Crotalus adamanteus*) there can be no question that this serpent was intended to be represented on the vessel.

But here an interesting point arises. The diamond-back rattlesnake, found chiefly in Florida, though its habitat extends along the Gulf coast westward to the Mississippi (some of these snakes having been found near New Orleans), is practically unknown in Arkansas, though one specimen is reported to have been met with there.[1] Even if this single doubtful case was correctly reported, presumably its occurrence was in southern Arkansas, while the region whence the bottle bearing the serpent came is well to the northward in that State.

The rattlesnake known to Arkansas is the banded rattlesnake (*Crotalus horridus*), and one of these snakes was killed by us at the Rose Mound on St. Francis river. The markings on the banded rattlesnake have nothing in common with those on the diamond-back variety.

In connection with this bottle, with its pictured diamond-back rattlesnake, three hypotheses can be formulated:

1. That the bottle was brought from regions to the southward: though we consider this most unlikely, as the decoration on the remainder of the bottle is of the type found in the St. Francis region and not of the kind found farther south.

2. That as the aborigines were constantly traveling, and often moving from place to place, the bottle was made in northern Arkansas by some one familiar with the diamond-back rattlesnake of more southerly regions.

3. That the *Crotalus adamanteus* inhabited northern Arkansas at the period when the bottle was made, but since has disappeared from so northern a territory.

Vessel No. 61. This vessel, a bowl 11 inches in maximum diameter, has projecting upward from one side what is intended to represent the neck and head of some animal whose teeth are roughly indicated by imprints in the clay. On the opposite side of the bowl is a conventional tail. This type of bowl with animal head and tail is common enough in the Middle Mississippi region, though vessels in which the head is hollow and contains small objects that rattle when shaken, as is the case with the vessel under description, are only exceptionally found there.

Vessel No. 7. A graceful bottle, coated with brilliant red paint, having a globular body and a slender neck. A projecting basal support had been broken from this vessel and the area of union with the body had been carefully smoothed to permit the vessel still to retain an upright position.

Vessel No. 54. This bottle, of black ware, had originally possessed three globular supports at the base, one or all of which having been broken off, the bottle had been treated in a way to enable it to continue in use.

Vessel No. 43, a compound form resembling three pots joined, though interiorly there is but little separation of the bodies. Traces remain of where probably an

[1] Leonhard Stejneger. "The Poisonous Snakes of North America." Rept. U. S. National Museum for 1893, p. 435.

CUMMINGS PLACE, VESSEL NO. 39. (HEIGHT, 8.5 INCHES.)

COCKAYNE, BOSTON.

upright neck and head, modeled after those of some animal, have been. The ware of the vessel is very coarse, and the outside is covered with soot, showing it to have been in use for culinary purposes. Two small ears project horizontally from opposite sides of each of the three openings. Maximum diameter, 13 inches; height, 7.8 inches. The outlines of a type of vessel somewhat similar to this one are figured by Professor Holmes.[1]

Vessel No. 39. This bottle (Plate XXIV), with double neck uniting in a single one above, belonging to a type not uncommon in the Middle Mississippi region, bears on the body a decoration consisting of six spaces coated with red and white pigment alternately, on a background of brown pigment. The neck, apparently, has been covered with red paint, now largely worn away. The appearance of the vessel, as shown on the plate, suggesting a lobed body for the bottle, is shared by the original vessel, but is not based upon fact, the lobed appearance being caused by the heavy bands of brown between the spaces of red and of white. A part of the neck is missing through breakage in early times. The restoration, shown in broken lines on the plate, is based on comparison with other bottles of the same type from the same region, though this double-neck type from Peru and elsewhere often has a longer upper portion to the neck. The asymmetrical shape of this vessel, which has been faithfully reproduced in the illustration, is typical of a great number of vessels along the St. Francis.

The Miller Place, Poinsett County.

The Miller Place, a short distance below the town of Marked Tree, but on the opposite, or western, side of the river, is the property of the Messrs. Bennett Brothers (T. J., J. F., and W. W. Bennett), who reside on the plantation and at Marked Tree.

In the Twelfth Annual Report of the Bureau of Ethnology, for 1890–91,[2] is a description of this place and a plan from which one who has lately visited the place can see how much cultivation has changed it in later years.

Though much digging was done at the Miller Place in earlier times, for the last ten years, at least, indiscriminate work on the place has been prohibited, though there has been surreptitious search, and, according to all accounts, a great amount of pottery has been uncovered in the course of cultivation. In fact, at the time of our visit there, two skeletons, one with two earthen vessels, were ploughed up within a few feet of where we were at work.

Immediately at the landing at the Miller Place are extensive high places of artificial origin, on which are a dwelling, a large barn, and various smaller buildings, with fenced ground pertaining to them. All this ground, of course, was closed to us.

Leading back through cultivated fields toward woods which surround the place are two parallel ridges of rich, black soil, both of which have long been under cultivation. It was in these ridges that practically all our quest was conducted.

[1] *Op. cit.*, Plate VII, a.
[2] Page 207 *et seq.*

Somewhat back from the landing, but in full view from it, are two mounds surrounded by cultivated ground. One of these, doubtless quadrangular in the past, has now the outline of a triangle with extremities somewhat blunted. Its height above the general level is 12 feet, though if measured from positions where it is evident that soil has been removed, the height is considerably greater. The diameters are 175 and 140 feet. The summit-plateau is about 100 feet by 70 feet. This mound was dug into superficially with negative results.

The other mound, a truncated cone and very symmetrical, rises about 13 feet above the general level of the surrounding fields. Its diameter is 112 feet.

This mound, so far as we could determine, is composed of raw-looking, tenacious clay. Almost at the surface of the summit was a burial accompanied with four bottles.

It is most unlikly that this mound contains burials throughout, and it was not in our power to determine the matter with the force of diggers under our control, even if the destruction of a mound which might prove a place of refuge at a time of unusually high water were permissible or if the proposal to scatter quantities of raw clay over fertile ground could have been entertained by the owners.

An excavation, partly filled with water at the time of our visit, whence, no doubt, material for the mounds had been taken, is near the ridges of which mention has been made.

Three days were spent by us in digging at the Miller Place. Burials were encountered in all parts of the ridges, though they were somewhat scattered and never in large groups.

Fifty-eight burials were encountered, excluding recent disturbances. Of these burials two were of adolescents, eighteen or possibly nineteen were of children, the remainder being of adults.

With one exception, that of a child lying partly flexed on the right side, all burials when determined were at full length on the back, two having the feet crossed at the ankles.

One skeleton lay with the head resting in a large bowl.

The custom along the St. Francis of depositing few objects except pottery with the dead (and the natives there certainly fulfilled their duty in respect to pottery) was emphasized at this place. Shell beads (in one instance a single bead) were with six burials. In several cases small shells perforated longitudinally, badly decayed as a rule, lay with other beads. A single tubular bead of sheet-copper rested on the thorax of a skeleton.

Burial No. 36, an adult, had at the right shoulder a pot, and a bottle farther down near the right humerus. At the left elbow were a bowl and a pot, the latter containing a large number of minute chips of flint.

Burial No. 41, an adult, had a bowl at the skull, and at the outer side of the left thigh, four arrowheads made from antler-points, and two projectile points of flint of the elongated, leaf-shaped variety. Incidentally, it may be said that barbed arrowheads or any arrowheads of stone, except of the type to which reference has

MILLER PLACE, VESSEL NO. 1. (HEIGHT, 9.7 INCHES.)

COCKAYNE, BOSTON.

MILLER PLACE, VESSEL NO. 42. (HEIGHT, 10.8 INCHES.)

COCKAYNE, BOSTON.

just been made, are uncommon along the St. Francis. On the other hand, arrowheads wrought from antler-points are more numerous in the St. Francis region than we have found them to be elsewhere.

Burial No. 44, the skeleton of a child, had near the upper part of the skull a bowl in which was a small pot inverted. Also near the skull were two bottles. At the right and on the left of the cranium was an ear-plug of shell of the blunt pin variety, while beads of shell, including one perforated marine shell (*Oliva literata*), lay at the neck. Square beads of shell having carved line decoration were on the upper part of the thorax. At the left shoulder was a bottle, its opening covered with a small bowl inverted.

Burial No. 49, an adult, in addition to pottery, had, at the neck, one large, spherical shell bead, and seven tubular beads of bone, each about one inch in length.

Throughout the digging were found, apart from burials, and probably lost while the site was inhabited: a spade of flint, 7 inches long and 4 inches in maximum diameter; three small ear-plugs of earthenware; several piercing implements of bone; antler-points; earthenware disks made from broken pottery, perforate and imperforate; one bone bead; a small "celt," probably of sedimentary rock; one pipe of earthenware, of ordinary type.

One hundred and twelve vessels of earthenware were found on the Miller Place, fifty-eight of which were presented to the owners. A large proportion of the remainder, undecorated and hopelessly crushed, was not available for removal.

In eight of the vessels found were mussel-shells—two in one instance. Bones of small fish were in four vessels.

The maximum number of vessels found with one burial was six, in one instance; but, as a rule, one, two, or three vessels lay with the dead, though occasionally burials were found unaccompanied with any artifact. As is usually the case, small vessels as a rule had been placed with burials of children.

Paint had been used as a decoration for pottery in nine instances, three times consisting of a uniform coating of red.

In three cases at the Miller Place incised decoration over the bodies of vessels which had not been intended for culinary purposes had been attempted, but was of the rudest character. It was noted here also, as elsewhere, that a marked tendency on the part of the aborigines had existed to place imperfect vessels with the dead.

The following vessels from this place seem worthy of special mention.

Vessel No. 1, a bottle of yellow ware (Plate XXV), has in red pigment two parallel bands around the neck, and on the body, also in red, a combination based on the swastika, the symbol of the four winds or directions.

Vessel No. 42. This bottle (Plate XXVI), originally with a tripod support, which had been lost through breakage in aboriginal times, has a decoration consisting of a number of stepped or terraced figures representing cloud-symbols, done in red pigment on a background of white material, doubtless kaolin such as we found had been used for pigment along Arkansas river. The neck of the bottle shows much wear, and the designs formerly upon it are hardly distinguishable at the pres-

ent time. We have noticed this worn condition on the necks of many bottles. and believe it may have arisen from abrasion by a cord used for suspension. We have found in several instances bottles whose necks plainly showed slight grooves left by a cord or thong.

Vessel No. 67. This bottle (Plate XXVII) has, by way of decoration on the body, diamond-shaped figures in red pigment enclosed in diamonds composed of pigment of a yellow tinge. The space encircling the base of the neck is not decorated with this pigment, but is the yellow ware without the addition of coloring material. On the neck of the bottle, on a background of red, is an angular meander of the same shade of pigment as appears on the body of the vessel.

The Potter Place, Poinsett County.

The Potter Place, on Little river, owned by Mr. W. M. Potter, who lives there, borders the stream and is made up of considerable high ground of the same character as we have described as being along the St. Francis. This place was occupied for two years by a very energetic dealer in Indian pottery, who covered the upper St. Francis and Little rivers in his work, almost as thoroughly as did another dealer, whom we have mentioned, that part of the St. Francis below Marked Tree.

Considerable digging at random by us in a part of the plantation not occupied by houses and fenced enclosures, came upon ten burials: five of adults; three of children; two of adolescents.

The usual extended position for burials had exceptions at this place as follows: one burial in a squatting position; one in a similar position except the body was somewhat tilted to one side; one burial extended, face down.

With one interment was a bead of bone; with another, a shell hoe; and two shell beads were with a third.

Fig. 48.—Pipe of earthenware. Potter Place. (Full size.)

Burial No. 10, an adult, extended face down, had at the left elbow a bottle with a bowl inverted over the opening. At the right of the pelvis was an arrowpoint of deer-antler. A piercing implement of bone lay at the left thigh. At the left knee were four arrowpoints of antler and one of flint. Somewhat above the left knee was an earthenware pipe having in front of the bowl a rudely modeled human head in relief. At the front of the base of the bowl are two projections to hold the pipe in an erect position (Fig. 48).

A small "celt" lay apart from burials.

MILLER PLACE, VESSEL NO. 67. (HEIGHT, 6.5 INCHES.)

All burials but two were accompanied with pottery, and one of these two showed signs of disturbance, which may have removed accompanying vessels.

Eighteen vessels in all, presenting no feature of interest, with one exception, were with the burials. A bowl on which had been two loop-handles, one on each side below the rim, had lost one handle in aboriginal times. This handle had been replaced by a perforation presumably to enable the vessel to be continued in use. Evidently the loop-handles, so common on aboriginal pottery in certain regions, were not, as some have thought, simply ornamental, but served a practical purpose. Red pigment had been employed on but one of the eighteen vessels.

The Stott Place, Poinsett County.

The Stott Place, belonging to Mr. Frederick M. Stott, who lives on it, also had undergone careful search by the diligent worker to whom we have referred in our account of the Potter Place.

There are no especially high places on the Stott property, but the surface of the land is slightly rolling, owing its irregularities to aboriginal deposit.

Considerable digging came upon six burials—four of adults, two of children. Where determined, the extended form of burial had been practised.

Burial No. 1, the skeleton of an adult, which was saved almost entire, and with the skull in good condition, presents pathological features of much interest, including a reunited fracture. In addition to three vessels, a chisel chipped from a flint pebble, 5.25 inches in length, lay with the remains.

Thirteen vessels were found with the burials, nearly all of them undecorated, two or three having trivial ornamentation.

In one instance two large fragments of pottery had been placed over a skull.

At the Stott Place, which is on the outskirts of the town of Lepanto, our journey up Little river ended, for reasons given in our introductory remarks.

In the cemeteries of St. Francis river, as in many other parts of the Middle Mississippi valley, the fish, as is well known, was a favorite concept in connection with pottery and is found as a decoration on the ware in various degrees of convention. As a series of bowls from the St. Francis, showing gradations from the fish to a highly conventionalized decoration, may prove of interest, such a series is given in Figs. 49 to 56, inclusive.

Through the courtesy of Prof. F. W. Putnam and Mr. C. C. Willoughby, of Peabody Museum, Cambridge, Mass., we have received nineteen photographs representing the most interesting vessels in the collection of pottery made on the St. Francis, in 1880, for Peabody Museum.

In Figs. 57 to 63, inclusive, are reproduced (about one-third size) seven of these vessels, all but one decorated with red pigment, which least resemble others found by us on the St. Francis, though some of the vessels from the Peabody Museum collection, which we figure, rather nearly approach in appearance certain ones found by us.

FIG. 49.—Jones Place. In this figure we have a bowl representing a fish, with some attempt at modeling the head and tail, which are placed considerably below the rim.

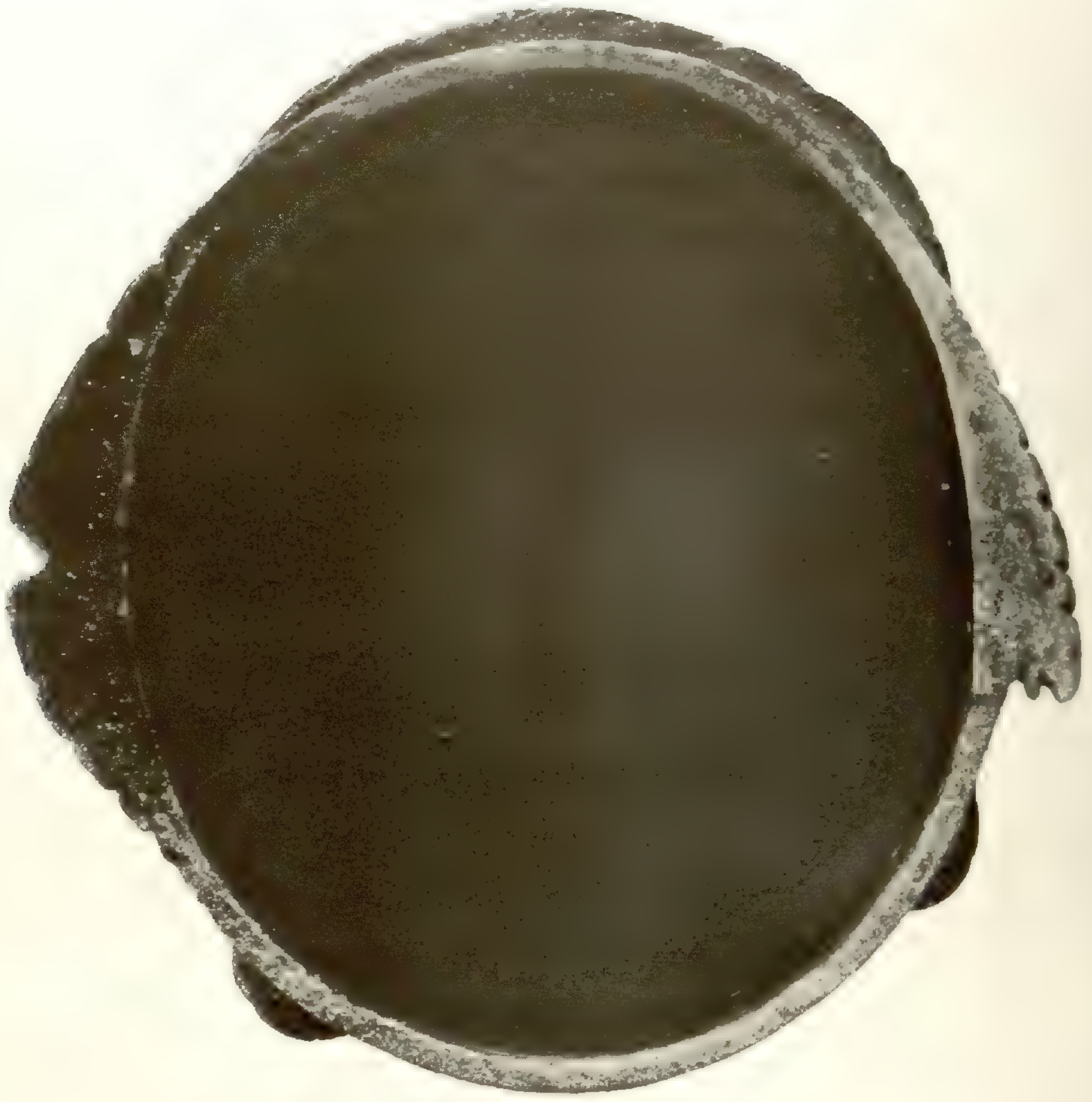


FIG. 50.—Near Turkey Island. Next we see a more conventionalized head and tail, and notice that both have been placed at the level of the rim.

FIG. 51.—Miller Place. The next step in the evolution is simplification in the rendering of the head and tail.

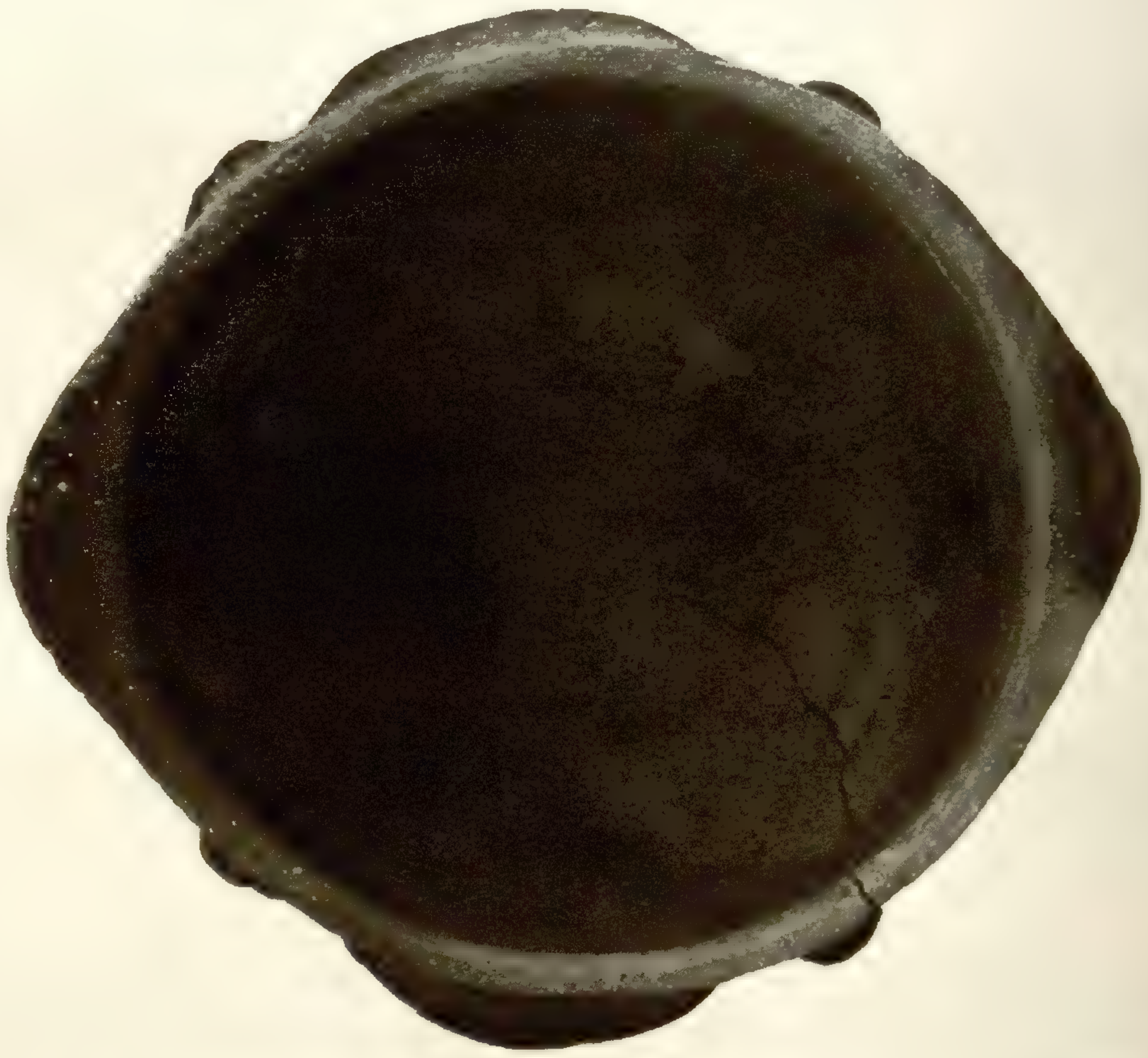


FIG. 52.—Jones Place. We now see the head and tail of the fish without detail and appearing more like handles, though the dorsal and the ventral fins still remain on the bowl.

FIG. 53.—Near Turkey Island. The convention is now further advanced. In addition to the plain and uniform appearance of the head and tail, we see the dorsal and ventral fins resembling handles, and without attempt at detail.

FIG. 54.—Rose Mound. The fins have disappeared. The head and tail are uniform or perhaps simply the tail of the fish has been duplicated.

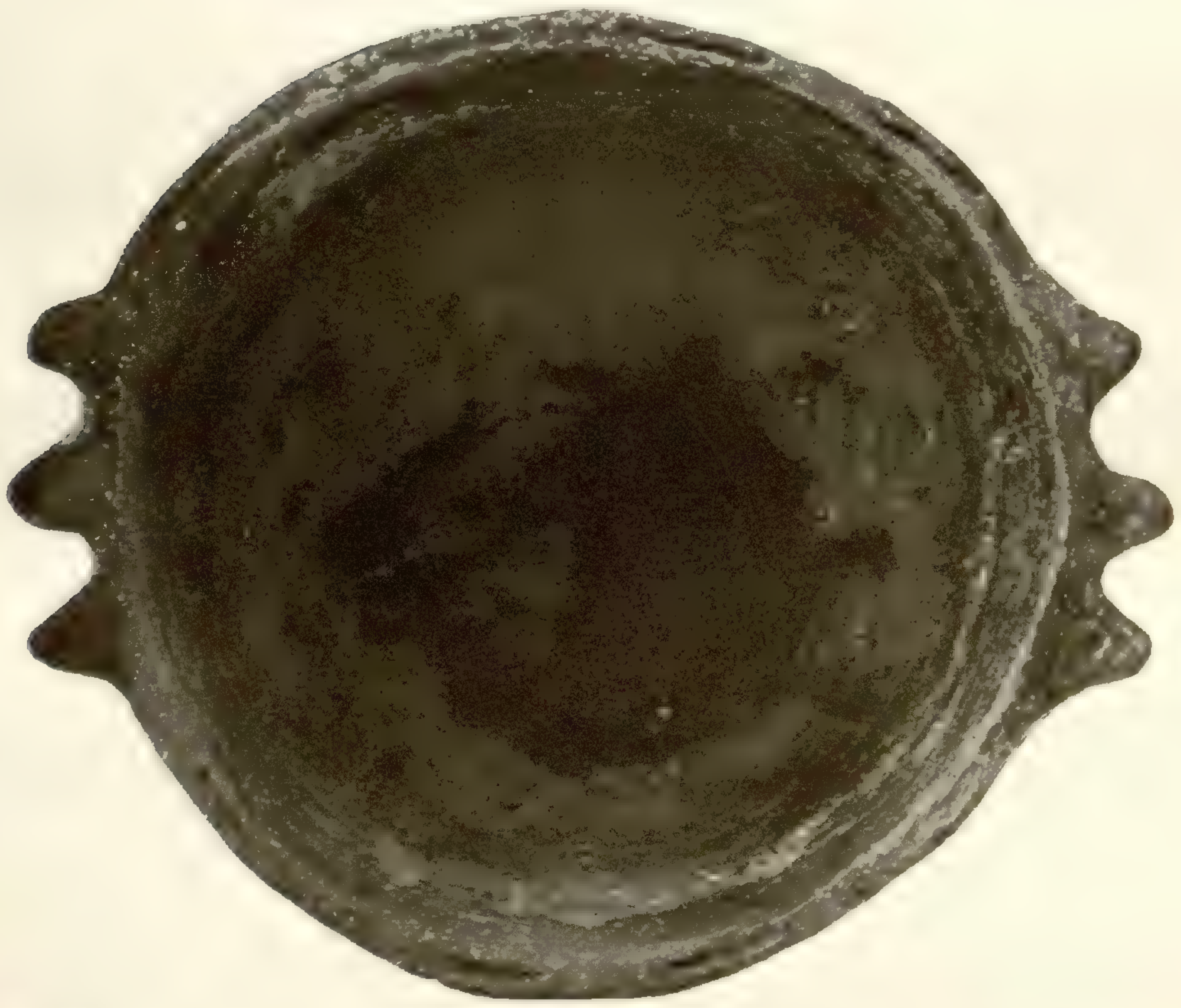


FIG. 55.—Jones Place. Here we have a further step in convention, two tails with but little resemblance to those seen in the early stage of the evolution are present on the bowl.

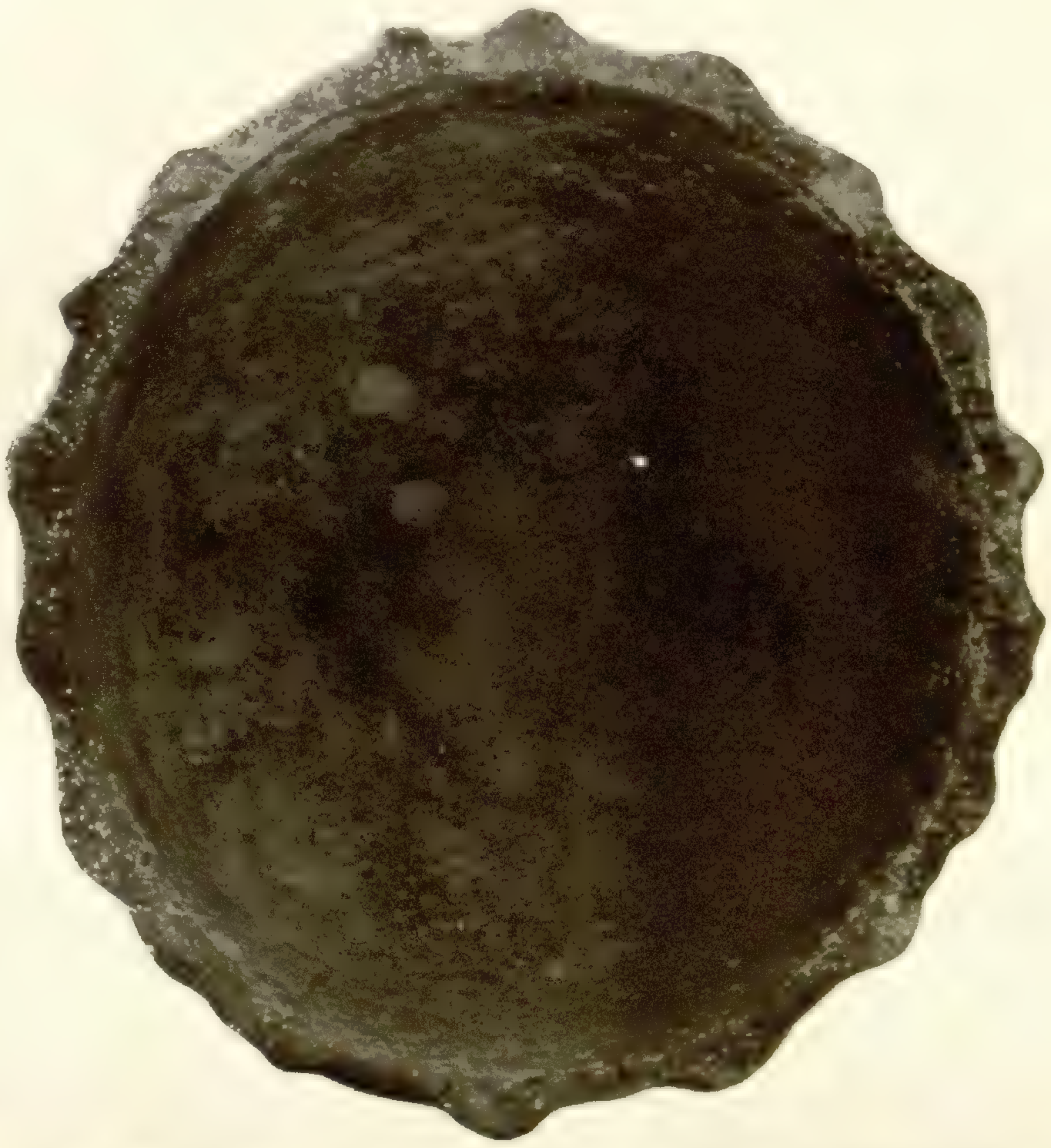


FIG. 56.—Near Turkey Island. Lastly we have a bowl with a uniform decoration encircling the rim, based upon the tail shown in the preceding figure.

FIG. 57.—Peabody Museum Collection. Rose Mound.

FIG. 58.—Peabody Museum Collection. Rose Mound.

FIG. 59.—Peabody Museum Collection. Rose Mound.

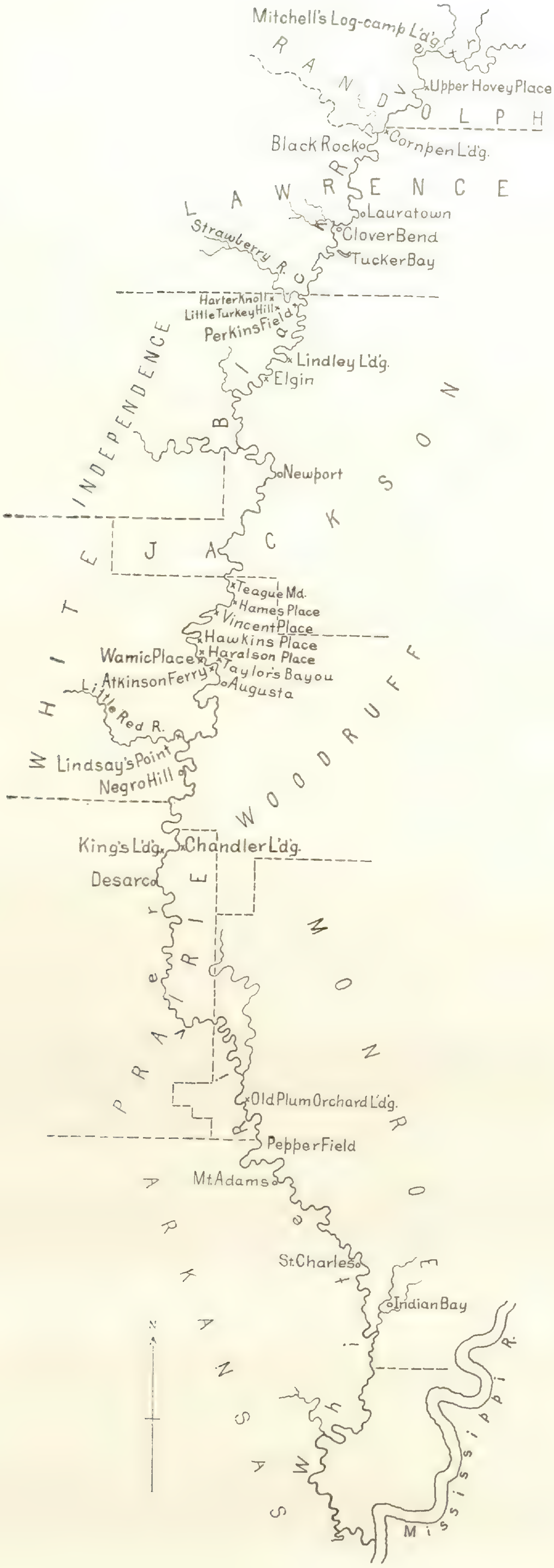
FIG. 60.—Peabody Museum Collection. Rose Mound.

FIG. 61.—Peabody Museum Collection. Halcomb Mound.

We are unable to identify the Halcomb Mound, whence came one of the vessels from the Peabody Museum collection. The mound is referred to as being "two miles above Neeley's Ferry." This is about the location of the Catfish Mounds (described in our report), and perhaps thirty years ago they bore the other name.

FIG. 62.—Peabody Museum Collection. Fortune Mound.

FIG. 63.—Peabody Museum Collection. Stanley Mounds.



MAP OF PARTS OF THE WHITE AND BLACK RIVERS

Scale in miles

0 5 10 20

1910

Part II.

WHITE, AND BLACK[1] RIVERS.

As stated in our introductory remarks, 265 miles of White river (which takes its name from the beautiful clearness of its water) and 109 miles of Black river, in both instances from the mouth up, were investigated by us last season.

The lower part of White river to St. Charles, 60 miles by water, had been carefully searched by us without result in the spring of 1908, the only high ground within reach having been Indian Bay, a description of which site may be found in a report of the Bureau of American Ethnology.[2]

Still farther up, White river runs through overflow country where sites of aboriginal occupancy if present, were not within working distance from the water. In fact the entire stream, so far as investigated by us, is lined by much low ground where archæological research is not likely to be rewarded. Knowing this in advance, and that, with a few trifling exceptions, no aboriginal objects had been obtained from the White and Black river regions, in Arkansas, we nevertheless decided to search the territory thoroughly in order that a region so favorably situated geographically in the midst of a territory filled with Indian remains could be placed on record, though realizing that the quest might be a fruitless one.

While most of the owners of sites along White and Black rivers granted cordial assent to our request to investigate their properties, some failed to make reply, though addressed a number of times on the subject. We mention this fact in no spirit of adverse criticism, but simply to explain the omission on our part of more complete investigation. However, presumably, enough work was done by us to determine the nature of the territory, for with one exception no site of interest was found along White river, and but three vessels of earthenware were encountered along the stream.

Along Black river, while some vessels were found, not one was of a character to warrant its transportation home.

On both rivers, though burials were fairly numerous, they were almost invariably unaccompanied by artifacts, a remarkable fact considering the custom of lavishing deposits upon the dead as practised by aborigines of nearby regions.

As a rule, we shall describe all mounds visited by us along White and Black rivers, but shall give details only of such dwelling-sites as yielded burials to our search, though many other sites were investigated.

[1] The Black river of Missouri and Arkansas should not be confounded with the Black river of Louisiana or the Big Black of Mississippi.

[2] Third An. Rep. Bur. Ethn., p. 487 *et seq.*

Sites Investigated.

White River, Arkansas.

Mt. Adams, Arkansas County.
Pepper Field, Monroe County.
Old Plum Orchard Landing, Monroe County.
King's Landing, Prairie County.
Chandler Landing, Prairie County.
Negro Hill, White County.
Lindsay's Point, White County.
Atkinson Ferry, White County.
Taylor's Bayou, Woodruff County.
Wamic Place, White County.
Haralson Place, Woodruff County.
Hawkins Place, Woodruff County.
Vincent Place, Woodruff County.
Hames Place, Woodruff County.
Teague Mound, Woodruff County.

Black River, Arkansas.

Elgin, Jackson County.
Lindley Landing, Jackson County.
Perkins Field, Independence County.
Little Turkey Hill, Independence County.
Harter Knoll, Independence County.
Tucker Bay, Lawrence County.
Clover Bend, Lawrence County.
Lauratown, Lawrence County.
Cornpen Landing, Lawrence County.
Upper Hovey Place, Randolph County.
Mitchell's Log-camp Landing, Randolph County.

Mound near Mt. Adams, Arkansas County.

About one-quarter mile NW. from Mt. Adams, in sight of the road which passes through woods on property of Mr. Richard McRee, who lives at Mt. Adams, is a mound 20 feet high and 138 feet in diameter of base. A number of trial-holes showed the mound to be, as far as dug, composed of river deposit. No sign of burial was met with, and no artifact with the exception of a single arrowhead of flint.

Mound near Pepper Field, Monroe County.

A tract near the river bank, formerly under cultivation, said to belong to the State, is known as Pepper Field. In this field is a low mound of sand, much

worked away through cultivation, on part of which is a house occupied by a colored family. Considerable digging in the unoccupied part of the mound yielded, in three instances, skeletal remains very badly decayed. With one burial was a rude vessel of earthenware, badly crushed.

Mound near Old Plum Orchard Landing, Monroe County.

Following the road in from Old Plum Orchard Landing, the residence of Mr. J. T. Evans is reached, on whose property is a small mound. This mound, which is much spread and is but a few inches above the surrounding level, yielded neither skeletal remains nor artifact.

Cemeteries near King's Landing, Prairie County.

At King's Landing is a plantation belonging to Mr. J. A. King, of Desarc, Ark. In a field back of the plantation house, which is near the landing, were a few scattered signs of aboriginal occupancy. Considerable digging in this field, at a place where the soil seemed darker than elsewhere, unearthed a number of skeletons, nearly all badly disturbed by the plow, and all very much decayed. With one skeleton was a large, tubular, shell bead; with another, below the knee, were many small, discoidal beads, also of shell.

About 1.5 mile N. by W. from King's Landing is a small cottonfield, also property belonging to Mr. King, where, in two places, were visible on the surface many fragments of human bones and dwelling-site debris.

Considerable digging in these sites yielded fourteen burials: partly flexed on the right, and on the left; at full length on the back; and disturbances, aboriginal and recent. In addition, two skeletons lay extended, face down; and another was on the back, partly flexed, with the thighs widely everted, the legs crossing at the feet.

The burials at this place presented no fixed orientation; nor did they at any other point, so far as our investigation on White and Black rivers extended.

Mounds near Chandler Landing, Prairie County.

About 1.25 mile almost due E. from Chandler Landing is a farm about fifty acres in extent, most of which is beyond reach of the river, though around it is woodland which is inundated in periods of high water.

The farm and the surrounding forest land are the property of Mr. E. W. Grove, of St. Louis, and are under the management of Mr. R. D. Caldwell, of Desarc, Ark., who kindly placed them at our disposal.

Mound A.

A few feet from a farm house by the roadside, which is occupied by an intelligent colored man, who cultivated the farm, was a mound 7 feet 6 inches high, and 65 feet across its circular base.

The tenant informed us he had dug into the mound, intending to make a receptacle for potatoes, but coming upon human bones he had abandoned the project. With these bones, he told us, was a ball of stone and a grooved axe, which latter he presented to us.

The mound was practically leveled by us with the aid of from eight to twelve men, in twenty-nine working hours. While a mound of sand the size of this one could have been demolished with an equal force in half the time, this tumulus of loamy material, owing to long continued drought, was, with the exception of superficial parts, dried to a degree of hardness requiring constant use of the pick. This condition was not only a cause of delay, but made the recovery of objects difficult without subjecting them to breakage.

FIG. 64.—Vessel of earthenware. Mounds near Chandler Landing. (Height 3.4 inches.)

Human remains in this mound were often only decaying fragments—sometimes mere particles of bone—and were present throughout, but less frequently than would be expected in a mound of the size of the one in question were it not borne in mind that, presumably, many burials had entirely disappeared.

The condition of the bones and the character of the material in which most of them were embedded made determination of the form of burial impossible, though in several instances the burial at length was indicated. In one case a layer of bones was present, apparently consisting of skeletons and parts of skeletons mingled, many bones, however, being missing and others being out of place.

The artifacts in this mound, and in a small neighboring one to be described later, show that a culture tending toward the use of stone exclusively had prevailed at the place, a fact quite exceptional in all our work in Arkansas.

FIG. 65.—Pipe of earthenware. Mounds near Chandler Landing. (Full size.)

One vessel of earthenware lay with a burial. This vessel, shown in Fig. 64, is of no special interest except that it is practically the only one found by us on White river, the two others referred to elsewhere having been represented by undecorated fragments of inferior ware.

With another burial was a pipe of earthenware, 5.3 inches in length (Fig. 65), the only other object of earthenware present in the mound. This pipe, like all others found at this place, has the bowl and the stem in one piece. Vertical and

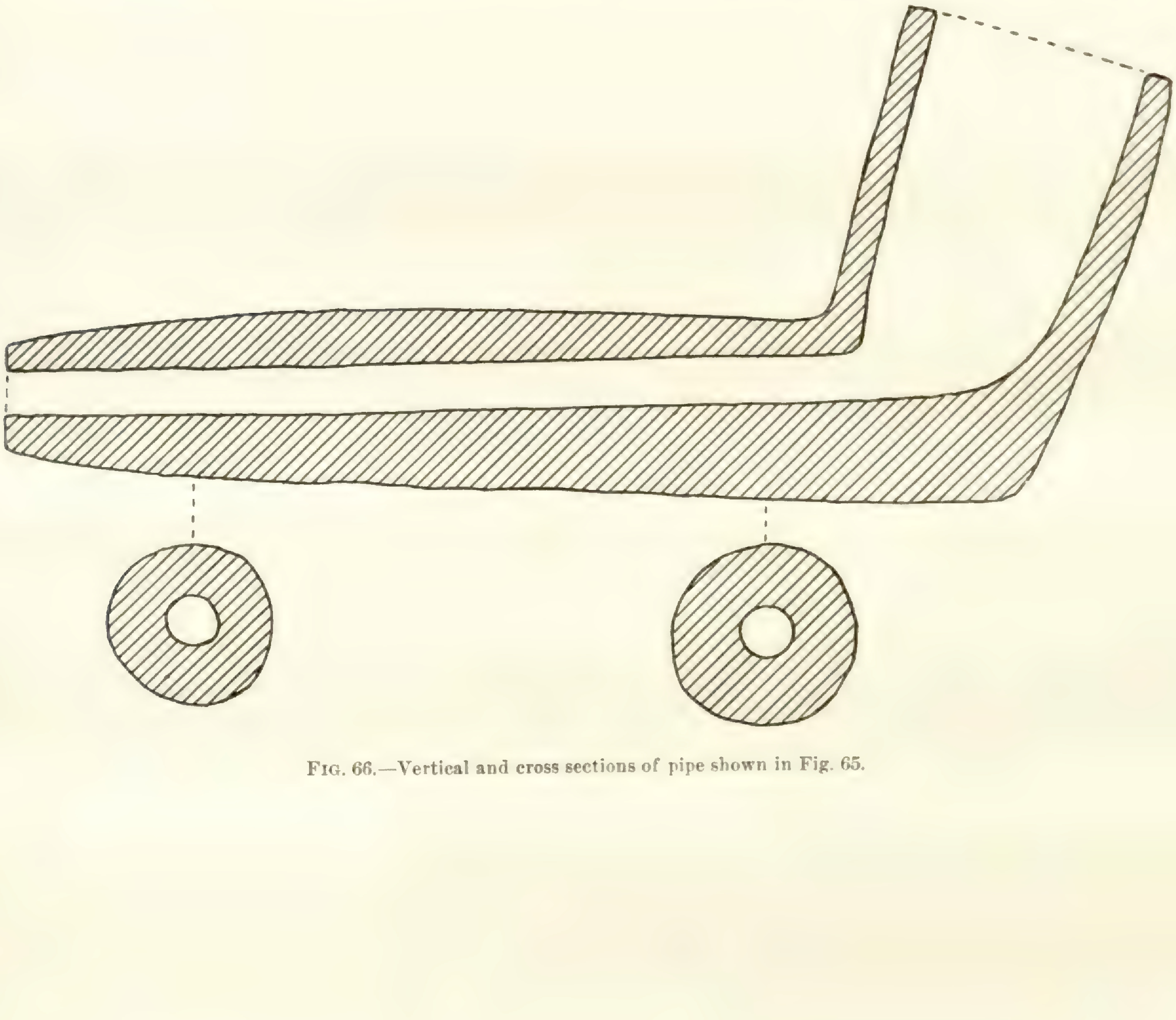


FIG. 66.—Vertical and cross sections of pipe shown in Fig. 65.

FIG. 67.—Pipe of shale. Mounds near Chandler Landing. (Full size.)

cross sections are shown in Fig. 66. There came from this mound also, both near human remains, two monolithic pipes, similar in shape, of massive shale (as were all the stone pipes from these mounds), one 7.25 inches in length (Fig. 67, vertical and cross sections in Fig. 68), the other unfortunately deprived of part of its stem by a blow from a pick which ground the part that was struck into irrecoverable fragments. There was also present in the mound the stem of a stone pipe which

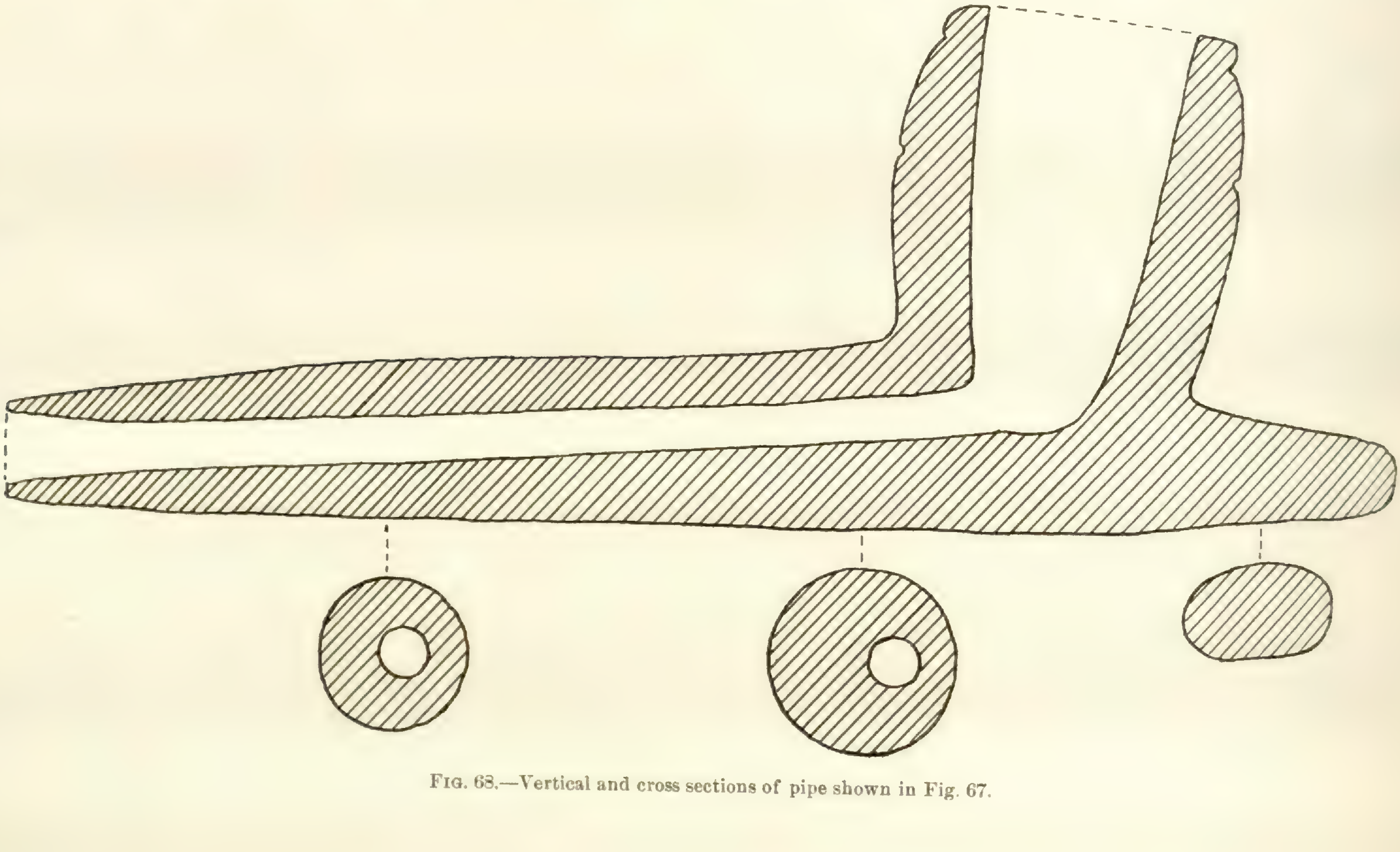
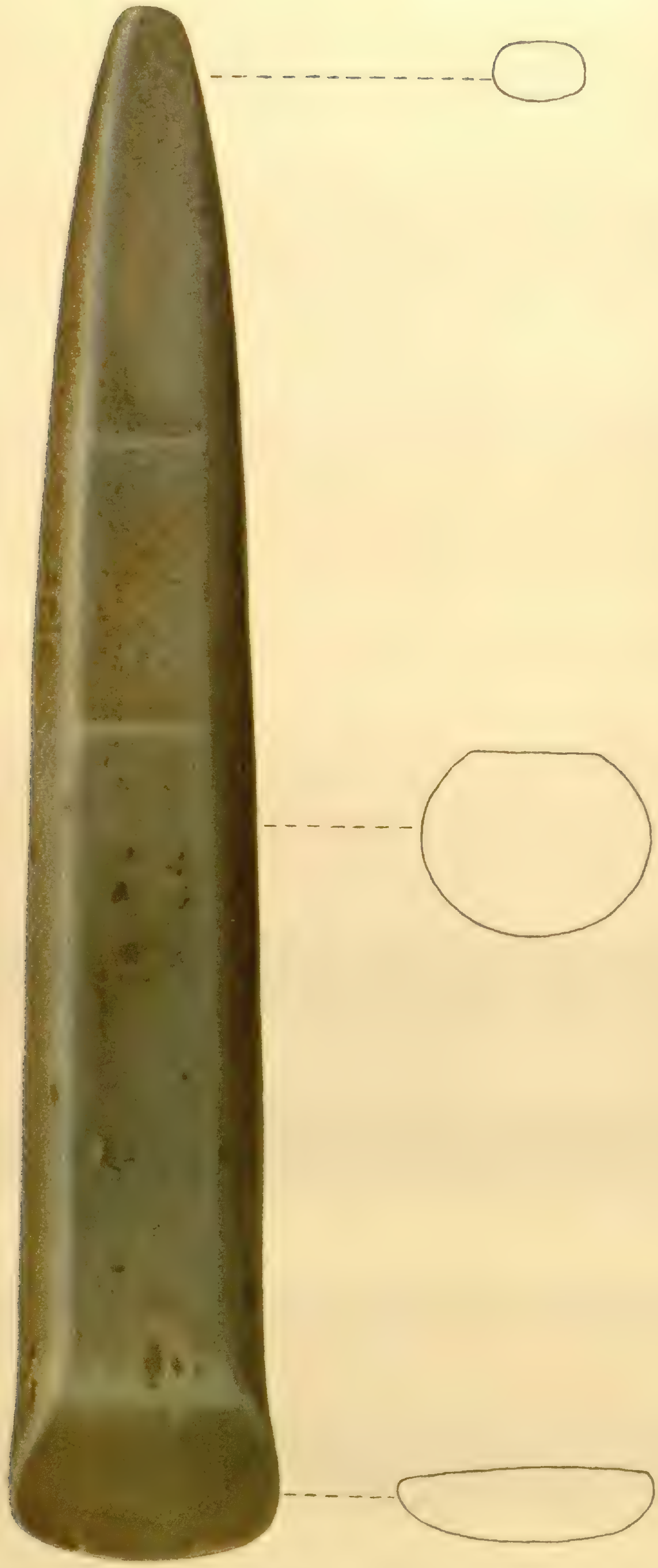


FIG. 68.—Vertical and cross sections of pipe shown in Fig. 67.



NEAR CHANDLER LANDING, CEREMONIAL AXE. (FULL SIZE.)

COCKAYNE, BOSTON.

had been similar to the two already described. Its base is flat like that of the pipe from Mound B.

Half-tone representations of the earthenware pipe and the stone pipe, from Mound A, were submitted by us to Mr. Joseph D. McGuire whose report on these pipes, based on his great experience in such matters, is highly valued by us.

The pipes, according to Mr. McGuire, seem to be extremely interesting specimens of the Monitor type and certainly would be classed as such if only their bases were flat—especially in the case of the stone pipe which apparently has some features belonging to the Siouan type. Mr. McGuire, however, does not know of the occurrence of the Siouan type so far west as Arkansas, though pipes of this type are common from Maine to Georgia along the Atlantic seaboard, and as far west as the mountains, as may be seen by Mr. McGuire's "Pipes and Smoking Customs of the American Aborigines."[1]

The earthenware pipe from the Chandler Landing mound, according to Mr. McGuire, apparently belongs to the same type as does the one of stone, and is unique so far as Mr. McGuire recalls. The large bowl, as is well known, is common to the Arkansas pipes, but the small perforation in the stem appears to be typical of the Monitor type. While the earthenware pipe is in its exterior similar to pipes found from South Carolina to New Jersey, the perforation of the bowl and the stem in the earthenware pipe is different in proportions from those found in the others.

Also Mr. McGuire considers the finding of the earthenware pipe and the stone pipe in the same mound to be an extremely interesting thing.

Unfortunately the half-tone representation of the stone pipe from Mound B near Chandler Landing was not prepared in time for us to submit it to Mr. McGuire. While the stone pipe from Mound A shows a flattening of the base, a broken pipe from Mound A as well as the pipe from Mound B show a more decided flattening and seem to be still more confirmatory of Mr. McGuire's belief that the pipes from this place are of the Monitor type.

Four boat-stones came from this mound. Of these we shall speak later in connection with two others found in Mound B nearby.

Throughout the mound, usually apart from burials but sometimes with them, were eighteen lanceheads and arrowheads of flint, all found singly with one exception where four lay side by side with a burial. Also with a burial lay a finely wrought leaf-shaped blade of flint, 9.75 inches in length and having a maximum width of 2.3 inches.

Near the leaf-shaped blade was a rare form in stone (Plate XXVIII), 8.3 inches in length. The material is probably green quartzite. This object, which resembles a chisel in shape, is in reality a ceremonial axe, as is evident from the mark left plainly upon it by the handle.

Not far from this ceremonial object, and also in association with bones, was another, of slate, of the same type, 10.5 inches in length.

[1] Rep. U. S. Nat. Mus., 1897.

In the present connection it may be said that the so-called hoe-shaped implements which some writers had supposed to be ceremonial axes, have been demonstrated to be such,[1] inasmuch as a number of these "implements" found by us plainly show where and how their handles had been placed; and the soft stone from which these objects often have been fashioned and the absence of chipping at the cutting-edges clearly indicate their ceremonial character.

The "celts" of copper, and the long, slender implements of the same material, found at Moundville, Ala.,[2] were all set in handles in a manner similar to that of the so-called hoe-shaped implements; and it is our belief that objects of the type of those from Moundville, and also the chisel-like implements of stone found by us in the mound at Mount Royal, Florida, and at this place, as well as the objects generally known as spade-shaped, or spuds, are neither more nor less than ceremonial axes.

To return to the contents of this mound, fragments of much-decayed wood stained by copper lay near a burial; while dissociated were half a "celt" of sedimentary rock and a small flint implement with rounded ends.

Mound B.

About 400 yards in a northwesterly direction from Mound A, in the same field, was a mound 4.5 feet in height and 40 feet in diameter of base. This mound, largely of clay, had been much plowed away at the sides, so that by the complete excavation of the central part, 28 feet by 38 feet in diameter, we demolished practically all that had been left of the mound.

Fragments of bone were met with at intervals throughout the excavation, crushed flat and broken into many fragments.

Pottery was absent.

Lying with a burial were three lancepoints of flint, the largest 4.25 inches in length; and a handsome monolithic pipe, 7.25 inches long (Fig. 69, vertical and cross sections in Fig. 70).

With a skull were one shell bead and four perforated pearls, much decayed.

There came from this mound two boat-stones apart from bones, but which doubtless had been interred with them.

Of the six boat-stones from this place, two are made possibly from a green igneous rock, one from a ferruginous rock, one from gray shale, one from earthy limonite on which a hard ferruginous coating has formed, and one from rock crystal. They range in length between 2.5 inches and 3.7 inches, have no perforations or grooves, and but one shows a hollowing out of the base.

The boat-stone, the use of which is problematical, "found sparingly in most of the states east of the Mississippi,"[3] and here met with but slightly west of that

[1] "The So-called 'Hoe-shaped Implement.'" Amer. Anthropologist, July–Sept., 1903.

[2] "Certain Aboriginal Remains of the Black Warrior River." Journ. Acad. Nat. Sci. Phila., Vol. XIII, p. 154, Figs. 27 and 28.

[3] "Handbook of the American Indians." Bur. Am. Ethn. Bul. 30, Part I.

FIG. 69.—Pipe of shale. Mounds near Chandler Landing. (Full size.)

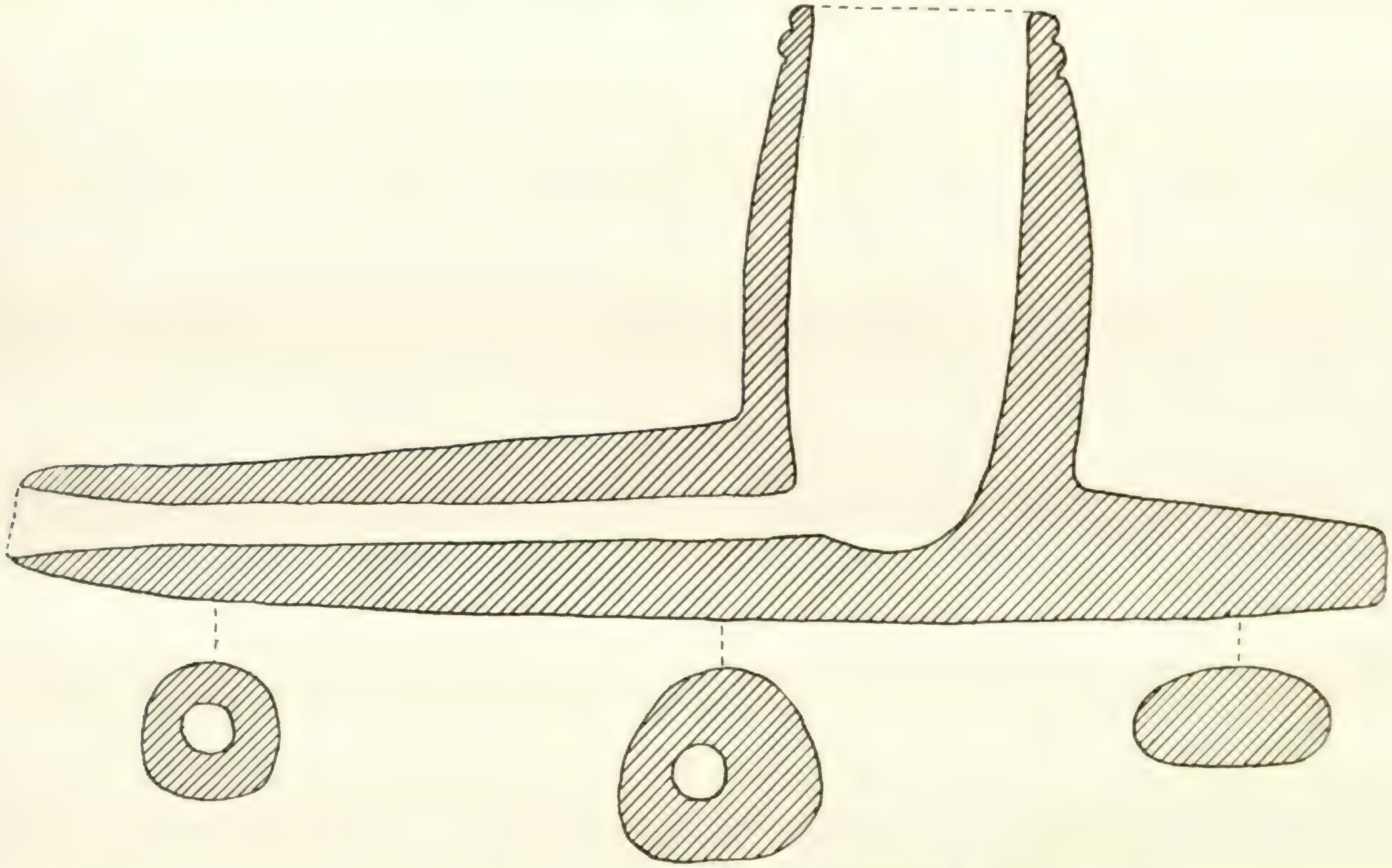


FIG. 70.—Vertical and cross sections of pipe shown in Fig. 69.

river, is usually, though not invariably, hollowed as to the base, and grooved or perforated. Wisconsin specimens, however, show some with flat bases, and one having a flat base with neither groove nor perforation.[1]

It would be untenable, we think, to suppose the superb boat-stone of rock crystal, with its beautifully beveled upper edge (Figs. 71, 72), which was found by us with a burial near the base of the larger mound, to be an unfinished object. Probably, as has been suggested, boat-stones without means of attachment were carried in the bags of shamans.

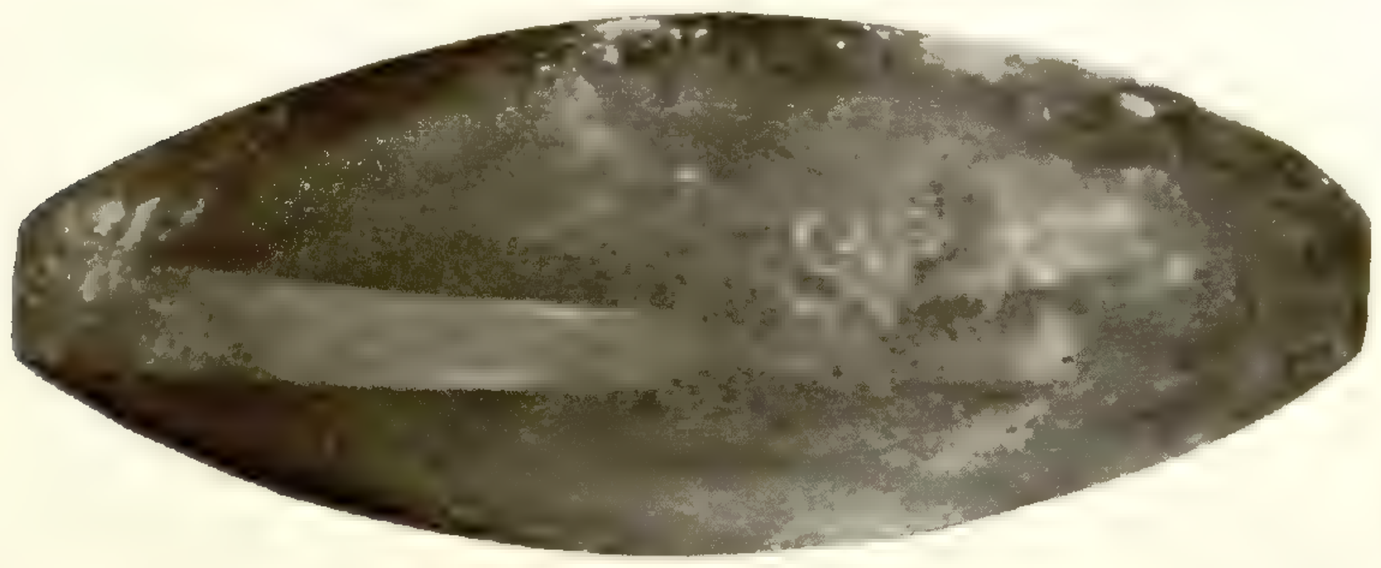


FIG. 71.—Boat-stone of rock crystal. Mounds near Chandler Landing. (Full size.)

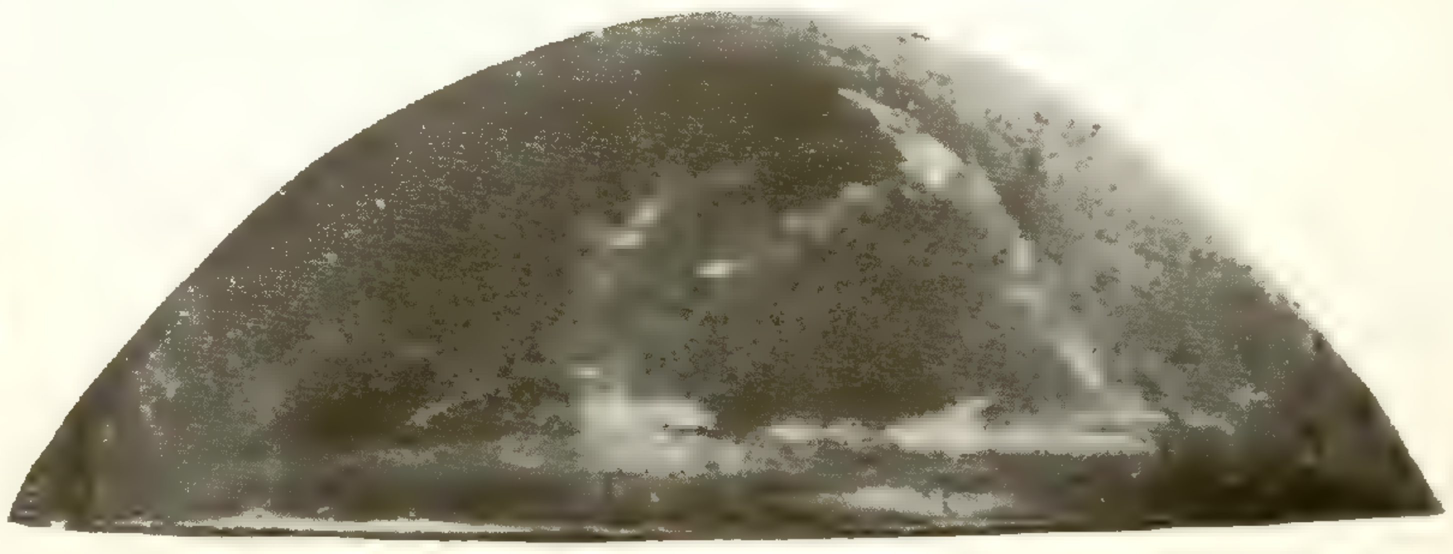


FIG. 72.—Boat-stone of rock crystal. Side view. (Full size.)

In the field in which were the mounds were several sites which, by the color of the soil, led us to believe they might prove to be cemeteries, though on them were no debris indicating aboriginal occupancy. Trial-holes in these places proved unavailing.

MOUNDS NEAR NEGRO HILL, WHITE COUNTY.

On property belonging to the Stoneman & Zearing Lumber Company, of Devall Bluff, Ark., in woods subject to overflow, on the western side of, and some in sight from, a trestle that forms the western approach of a railroad bridge crossing the river below the settlement of Negro Hill, are two low ridges and two low, flat-topped mounds, of sandy soil. Careful investigation of the two mounds and one of the ridges yielded neither bone nor artifact.

On the eastern side of the trestle and in sight from it is another low, flat-topped mound. Nine trial-holes in this mound produced in only one instance, near the surface, a few scattered human bones and fragments of an earthenware bowl.

CEMETERY AT LINDSAY'S POINT, WHITE COUNTY.

Lindsay's Point, the property of Mr. W. A. Haley, who lives on the place, may be reached from White river but is more conveniently approached by running up Little Red river about 2 miles.

The point is high ground surrounded by woods. Near the river is a strip of soil black from admixture of organic matter and having on the surface many small fragments of pottery, pebble-hammers, and other debris. It is said that human bones have been ploughed up at this place.

Careful investigation yielded scattered human bones and four burials, two of

[1] Charles E. Brown, "Wisconsin Archæologist," Oct.–Dec., 1909, pp. 147, 148.

which latter were disturbed skeletons, another lay at full length on the back, and one was partly flexed lying on the left side. With this last burial, near the knees, was an arrowhead or knife of flint.

Little Red river was carefully searched by us to West Point, about 18 miles up, by water. There is much high ground along the banks, which seems well fitted to have served as places of aboriginal abode. No mounds or cemeteries were met with, however, except the small site at Lindsay's Point.

It is possible that what we sought may be found in the high ground at a distance from the river, but unfortunately beyond our reach.

Mounds near Atkinson Ferry, White County.

On property of Mr. T. E. Stanley, of Augusta, Ark., about 3 miles by water above Augusta, but on the left side of the river, going up, are several low mounds, one of which serves as a site for a stable. Considerable digging in these mounds yielded nothing.

Mounds near Taylor's Bayou, Woodruff County.

Taylor's Bayou (locally called Taylor's Bay) enters White river a short distance above Augusta. About 2 miles up the bayou, on the eastern side, is a plantation belonging to Mr. T. E. Stanley, of Augusta, owner of the place at Atkinson Ferry, to which reference has just been made.

At the southeastern end of the Taylor Bayou plantation, in a cultivated field, are two mounds within a few yards one of the other, both much spread by the plow.

Mound A.

This mound, about 4 feet in height and 47 feet across its circular base, of dark, sandy clay, had nine trial-holes sunk into it by us. These trial-holes (supposed to be 5 to 6 feet in length and 3 feet across, but which are sometimes not fully this size) were first carried to the base of the mound and then extended to include a considerable part of it.

Four burials were encountered, as follows: an adult and an adolescent, both partly flexed and lying on the right side; a small child; an adult at full length on the back.

The bones of the three skeletons first named, though found less deep, were badly decayed and fragmentary. On the other hand, the extended skeleton, which was at a depth of 40 inches, was well preserved.

No artifacts lay with the burials; indeed, the only ones found in the mound were a small flint arrowhead, and a fragment of pottery, square with rounded corners, having a countersunk perforation in the center from which, on one side, incised lines radiate to the margin.

Mound B.

This mound, about 2 feet high and 45 feet in diameter, was tentatively investigated by means of nine trial-holes which afterward were greatly enlarged. It became apparent that the central part of the mound had been used for burials; consequently a median portion, 24 feet in diameter, was completely dug out by us.

Sixteen burials, all badly decayed, were found, none deeper than 2 feet from the surface. The burials were as follows: some closely flexed, some partly flexed, sometimes to the right side, sometimes to the left; a skull with scattered bones; a skull with a single thigh bone; a flexed skeleton without a skull, though an isolated cranium was found at a distance of 4 feet from it.

But one artifact lay with these burials. Burial No. 4, the skull and thigh bone to which reference has been made, had with it a neatly-made pipe of massive red shale.

Apart from burials were a rude mortar represented by a flat stone slightly concave, and a long, irregularly shaped mass of stone which evidently had served as a grinder.

A mass of quartzite, also from this mound, irregularly pitted in two places on one side, has on the opposite side a circular concavity 5.25 inches in diameter and 1 inch in depth.

Mounds on the Wamic Place, White County.

At this place, in full view from the river, are a low mound on which is a small building, and two small rises of the ground in a field nearby.

The owner of this place did not live upon it, and failed to reply to our request for permission to investigate.

Mounds on the Haralson Place, Woodruff County.

On property of Mr. John G. Haralson, of Fitzhugh, Ark., in swamp dry at the time of our visit, are five low, flat-topped mounds, all near the border of Buckle Lake, a former course of White river.

These mounds, which had every appearance of having been domiciliary, were all dug into by us without discovery of anything indicating their former use as places of burial.

Mounds on the Hawkins Place, Woodruff County.

On the Hawkins Place, near the river, are two low, flat mounds, one of which is now in use as a cemetery. These mounds were not investigated by us, permission to dig not having been obtained.

Mound on the Vincent Place, Woodruff County.

About one-quarter mile ESE. from Vincent Landing is a mound about 2.5 feet high. It is known as the Hickory Mound throughout the surrounding country. Conditions were imposed as to opening this mound, which we did not see our way clear to accept.

Mound on the Hames Place, Woodruff County.

The Hames Place, belonging to Mr. and Mrs. W. N. Hames, residing on the property, has a history of human bones found while sinking postholes and in the course of agricultural work. In the garden and in the barnyard is raised ground, apparently what is left of a ridge or of a low mound. The soil in this elevation is black from admixture of organic matter.

Considerable digging in the garden unearthed six skeletons at a depth of from 15 inches to 2 feet from the surface. The bones were in bad condition, one skull and a few long-bones only being saved.

The burials, four of adults and two of children, were as follows:

Closely flexed on the right side	4
Partly flexed on the right side	1
Partly flexed on the left side	1

With one skeleton were shell beads at the neck, and the skeleton of a child had at the waist a pebble, a small quantity of powdered hematite, and discoidal beads of shell. These beads, in a double string, had been worn as a girdle.

In an adjacent field are a few small elevations on most of which were masses of baked clay bearing imprint of wattle, no doubt fragments from burnt wigwams. Three of these rises of the ground were dug into by us without success.

The Teague Mound, Woodruff County.

The Teague Mound, on the old Snapp Place, belonging to Messrs. Fitzhugh Brothers & Haralson, of Fitzhugh, Ark., is widely known on White river, and the fact that a mound of this size is famous shows how unimportant as to size the mounds on this river are.

The Teague Mound is in the form of a ridge (perhaps a mound and a causeway) 210 feet in length, extending almost due N. and S. From the southern extremity, where the height is 6 feet and the breadth 58 feet, the ridge slopes gradually upward to an altitude of 10 feet at the northern end, where it is 100 feet in transverse measurement.

This mound, which has suffered greatly through wash of rain, has every appearance of having been built for domiciliary purposes. Considerable digging into the raw clay of which it is made yielded nothing.

We shall now consider the sites on Black river.

Mound and Cemetery at Elgin, Jackson County.

About one-quarter mile below Elgin, a small settlement on Black river, on the same side of the stream, immediately on the bank, is a mound slightly eaten into by the river and much spread by cultivation. This mound, on property belonging to Mr. J. O. Taylor, living near Newport, Ark., is but little above the general level, and is circular in outline, with a diameter of about 100 feet. It is composed of rich, loamy sand. Considerable digging yielded one badly decayed skeleton, closely flexed on the right side.

In cultivated land, also belonging to Mr. Taylor, in a part of a field bordering the wood, about 250 yards west from the settlement, in rich ground somewhat above the general level of the field, is a dwelling-site having on the surface arrowpoints and fragments of flint, hammerstones, and debris of aboriginal occupancy, but almost no pottery.

Twenty-one trial-holes sunk in this site came upon six skeletons seemingly in good condition as they lay in the ground, but which on removal proved to be friable and on the point of disintegration. All skulls had given way through decay and pressure of the soil.

The burials, which were widely scattered, were as follows:

Closely flexed on the right side	1
Partly flexed on the right side	1
Closely flexed on the left side	1
Partly flexed on the left side (a child) . . .	1
Aboriginal disturbance from the pelvis down .	1
Infant	1

In another part of the field, somewhat nearer the settlement, was a slight rise of the ground, which evidently had been a dwelling-site, but in which no burials were found by us.

With other midden refuse were three disks of pottery, each having a perforation in the center, and part of a similar disk.

The reputation of Elgin as a site where human bones are discovered in cultivation is rather wide-spread. The territory bordering the settlement is said to be out of reach of high water and consequently offered to the aborigines an attractive place of abode. Unfortunately we were unable to find other dwelling-sites in the vicinity, though careful search was made.

Mounds near Lindley Landing, Jackson County.

On property of Dr. L. G. Slaydon, of Tuckerman, Ark., is a mound in a cultivated field, about one mile S. by W. from Lindley Landing.

The mound, of clayey sand, has been greatly spread by the plow, at the the expense of height, which is now 5 feet. The diameter of the irregularly circular base is 84 feet. We were unable to find in this mound any sign of its having been used for burial purposes.

About one-half mile in a southerly direction from Lindley Landing is a mound much spread by the plow, also in a cultivated field, belonging to Mr. D. C. Dowell, of Tuckerman. This mound, irregularly circular, has a diameter of 47 feet. Its height was 3 feet above the general level, but measured from the summit to the base while digging was under way, the height seemed to be somewhat in excess of the figure named. On the surface of the mound (which was almost entirely of sand) were many small fragments of human bone.

Trial-holes at once came upon burials, and vessels of earthenware, and hence

it was determined to dig out along the base a part of the mound 42 feet in diameter, which seemed to represent its original size, the rest of the present diameter probably being due to cultivation.

Burials, all badly decayed, were found in forty-two places, from just below the surface to a depth of 4.5 feet, one burial being in a pit extending 10 inches into yellow, undisturbed sand which lay under the dark sand of which the mound was composed.

In many instances the form of interment was not apparent owing to the decayed condition of the bones; occasionally, however, the nature of the burial could be identified, and included the burial at full length on the back and the flexed burial.

There were also, at the very base of the mound, some of the bones of a single skeleton, including the skull, in such arrangement that no form of burial other than the bunched variety was possible. The bunched burial was met with by us in this instance only on White and Black rivers.

Four and one-half feet down was a deposit of calcined fragments of human bones, 12 inches by 8 inches and 2 inches in thickness. Placed vertically on this deposit was a vessel of earthenware.

In another part of the mound were fragments of calcined human bones, not arranged in a mass but scattered. With this burial also, was an earthenware vessel. These were the only instances of cremation encountered by us along White and Black rivers.

Sixty-one vessels of earthenware lay with the burials in this mound, almost invariably near the skulls, but in several cases in the neighborhood of the pelvis. The vessels had been placed singly, in pairs, and in one instance three together.

These sixty-one vessels,[1] all of medium size, with the exception of several diminutive ones which were evidently toys, and some of which were found with skeletons of children, are of inferior ware. Shell tempering is present in some instances, but the pounded shell is often unevenly distributed, and the firing of the clay must have been imperfectly done. Many of the vessels were crushed to fragments when found, and the majority of the remainder fell into bits on removal.

In form the vessels, save in two instances where the cup is represented, are pots, bowls, and bottles, these last having in some cases short, wide necks, and in others long and narrow ones.

With a single exception, that of a cup with two encircling, incised lines, no attempt at decoration is apparent on the body of any vessel. A number of pots and bowls have loop-handles; and a few have projecting animal heads so rudely modeled that they barely escape being classed as knobs. On such vessels are conventional tails extending from the sides opposite the heads. Three or four of the bowls have small, flat ears extending laterally; these ears, in the case of one vessel, are decorated with rude, parallel, incised lines. Two or three of the loop-handle vessels have small, vertical projections on the sides not occupied by the handles.

[1] Each vessel, no matter how fragmentary its condition when found, is included in the enumeration, our object being to note what number originally had been placed in the mound by the aborigines.

No attempt at decoration in color is anywhere shown.

We are fully aware that in mounds and cemeteries vessels commonplace in form and decoration predominate, but we do not recall in any previous investigation in which any considerable number of vessels was found, having met with pottery which indicated such lack of skill or ambition on the part of its makers.

A ring of earthenware, possibly an ear-plug, rudely wrought, with an encircling groove, was found apart from human remains.

The only artifact present in the mound, with the exception of pottery, was a single arrowhead of flint.

In the same field in which was Mr. Dowell's mound, and about one-quarter mile in a southwesterly direction from it, was a slight rise in the ground, circular in shape, which at one time may have been a small mound. On the surface lay fragments of human bones and two beads of shell. Fourteen trial-holes came upon a disintegrating skeleton lying partly flexed on the right side, 10 inches below the surface. At the skull was an undecorated bowl of inferior ware.

In a field about one mile to the north of the Dowell Place are several dwelling-sites on which were arrowpoints, fragments of flint, and other midden debris, including parts of two earthenware disks, each of which had possessed a central perforation.

Mound near Perkins' Field, Independence County.

About one-half mile through woods, in a NW. direction from Perkins' Field, which is near the river bank, is a mound on property belonging to the Barnett Lumber Company, of Batesville, Ark. This mound, of rich, black loam, circular in outline and about 85 feet in diameter, has a height of 3 feet, approximately.

It is not a burial mound, strictly speaking, that is, it is not a mound built exclusively for burial purposes, but rather a dwelling-site which formed gradually during long occupancy and in which the dead had been interred.

Ten trial-holes, which were subsequently enlarged, some to double and some to almost treble their original size, resulted in the discovery of thirty-one burials of the customary closely-flexed or partly-flexed forms, and a few aboriginal disturbances which, the reader will recall, are caused by graves in aboriginal times being dug through earlier burials.

The interments lay from 8 inches below the surface to a depth somewhat more than 3 feet, the deepest being not in the mound proper but beneath it, in tenacious clay on which the mound was built.

The bones of all these burials were badly decayed. With them were: a lance-point of flint; several masses of stone; a lot of flint chips somewhat scattered, which may have been simply midden refuse lying in the neighborhood of bones.

There was also with a burial a pipe of soft claystone, 1.8 inches long and 1.3 inches in diameter, having a hole in the base in such a position that a stem inserted in it would have the bowl not at right angles but extending in the same axis with it.

Here and there in the soil, apart from burials, were a number of arrowpoints and knives, all of flint, and all rather coarsely chipped and lacking in finish. Also in the midden debris were: hammer-stones; a circular pebble, pitted on both sides; and four piercing implements of bone, one, 5.8 inches in length, double-pointed, and very neatly made.

Little Turkey Hill, Independence County.

Little Turkey Hill, as this mound is locally known, is on property belonging to the Barnett Land Company, who also are the owners of the Perkins' Field mound.

Little Turkey Hill is most conveniently reached by going up Strawberry river about one mile to a log landing and then proceeding inland another mile approximately in a westerly direction, through the woods.

The "Hill," in woods said to be subject to overflow, irregularly circular in outline, is of dark loam and is of the same character as is the mound near Perkins' Field. The diameter of Little Turkey Hill is 120 feet; its height, a little more than 3 feet. A hole about 7 feet by 18 feet, about in the center of the mound, had been made previous to our visit.

Fifteen trial-holes, some of which were greatly enlarged in the form of trenches extending along the base of the mound, came upon eighteen burials from a few inches to a trifle more than 3 feet in depth. These burials lay some closely flexed, some partly flexed, on the right side and on the left side. There were several aboriginal disturbances of skeletons.

No bones were in a condition to save.

Superficially few, if any, fragments of pottery were seen, and, while digging, almost none were encountered. Several very roughly made arrowheads or knives lay in the soil, apart from burials.

With a burial, at the right elbow, were a rude flint knife and three fragments of flint, and the inverted carapace of a tortoise; and these were the only artifacts found with burials, with the exception of those in a grave-pit about to be described.

In this pit, near together, were five skeletons of adults. One lay about 30 inches down (the measurement being taken to the upper surface of the skeleton as it lay), while the other four were 38 inches down, in clay beneath the mound proper. All these five burials had accompanying artifacts, a noteworthy fact in view of the paucity of such deposits in other parts of the mound.

Burial No. 7, closely flexed on the right side, had, at the neck, a considerable number of discoidal beads of such diameter that it is apparent they must have been made from the axis of a marine shell. Moreover, their structure is of a density to indicate their origin from the columella of a large ocean shell rather than from a river shell, which, having less solidity of material, tends to disintegrate.

With these discoidal beads, which are remarkably well preserved, were many other beads made by grinding down parts of small fresh-water shells (*Anculosa*), a variety related to *A. prærosa*, which latter shells have not been reported hitherto west of the Mississippi.

With all these beads, and no doubt used as central ornaments, were two barrel-shaped beads, one of claystone, one of red jasper, each about .8 inch in length.

Burial No. 16,[1] closely flexed on the left side, had many shell beads extending from the chin to the pelvis, most of them very badly decayed, as was the case with the shell beads found with four of the five skeletons in this grave.

With the ordinary beads along with Burial No. 16 was a considerable number of other beads, in a better state of preservation, made by suitably grinding a small river shell (*Neritina lineolata*).

Evidently as a central piece with the beads with Burial No. 16 was a curious tube of claystone, 2.5 inches in length and .7 inch in diameter, the diameter of the hole being .4 inch. At intervals over the outer surface of this bead were semi-perforations made with a pointed drill, as is indicated by the absence of cores and the presence of a deeper central part in each semi-perforation. That this bead at one time had been of greater length is shown by the presence at one end, of two remaining halves of these markings left by a drill.

Burial No. 17, lying closely flexed on the right side, had a number of shell beads with which were two tubular beads of jasper, one red, the other yellow with a mingling of red, 1.2 inch and .8 in length respectively, both highly polished.

Below the chin was a small drinking-cup wrought from a marine shell; and with the concave side against the skull was a badly decayed shell drinking-cup bearing incised decoration of a rather rude character (Figs. 73, 74, see p. 357).

A drinking-cup of shell from Harrisburg, Ark.,[2] with engraved exterior decoration, is shown in Plate XXIII of the Second Annual Report of the Bureau of Ethnology.

With the two remaining burials in this grave were shell beads only, which, as we have said, were badly affected by decay.

Harter Knoll, Independence County.

The landing on Strawberry river, to which reference has been made, has two roads leading from it, one of which we followed to reach Little Turkey Hill.

By going out the other road, which pursues a W. by N. course, about one mile through the woods, one comes to Harter Knoll, which is immediately on the left side of the road.

The Knoll, as it is called in the neighborhood, though it is of artificial origin, being of the same class of mounds as are the one near Perkins' Field, and Little Turkey Hill, is under the same ownership as are these two mounds. It is 3.5 feet in height and 115 feet, approximately, across its circular base, and is made of rich, dark soil, scattered through which we found hammer-stones, a few bits of pottery, and other midden debris. Thirteen very rude arrowpoints and knives were encountered also apart from human remains.

[1] Burials are numbered in the order of their discovery and not according to proximity.
[2] About forty miles in a straight line from where our cup was found.
[3] William H. Holmes, "Art in Shell of the Ancient Americans."

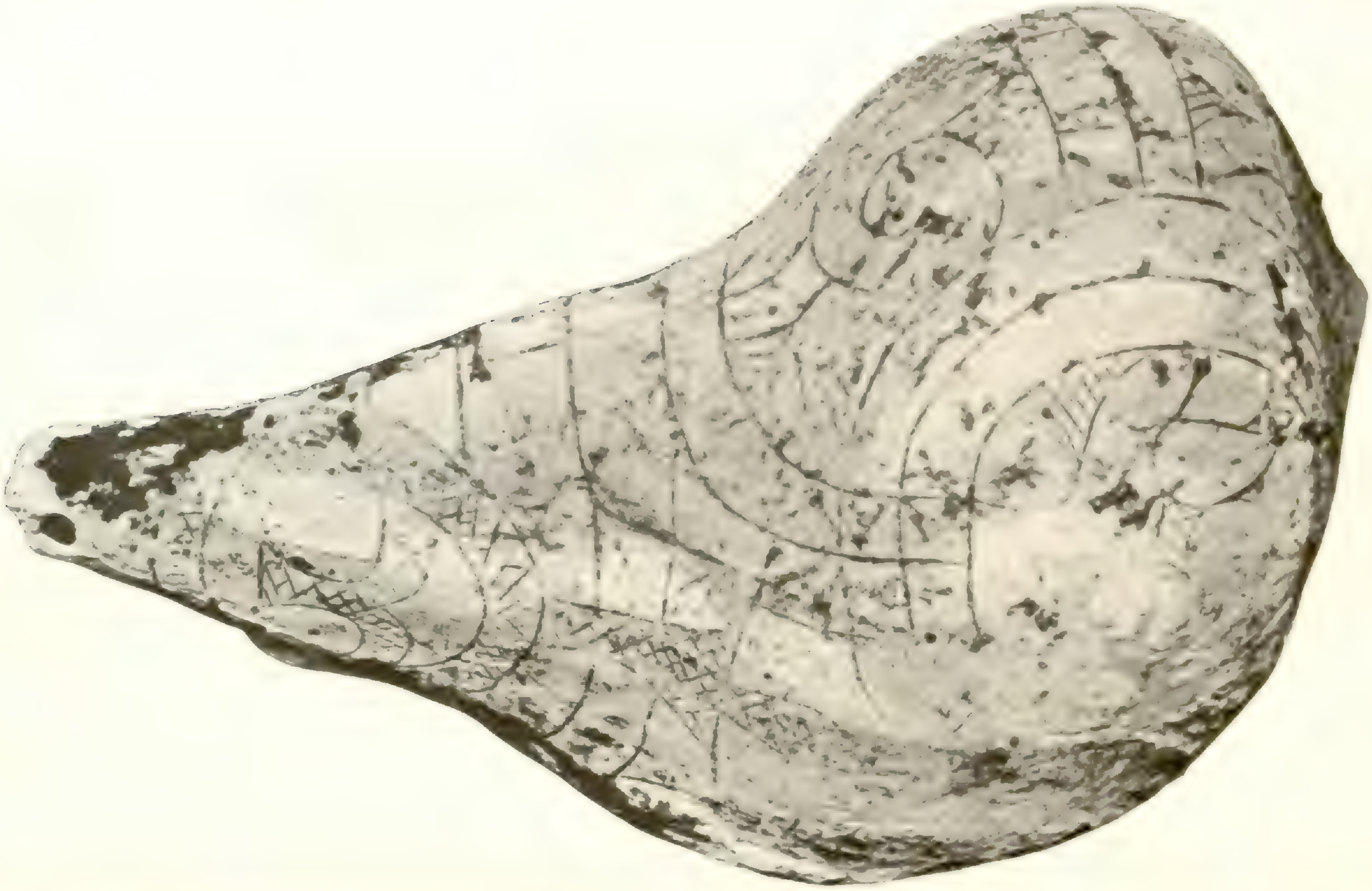


FIG. 73.—Shell drinking-cup with engraved decoration. With Burial No. 17. Little Turkey Hill. (Length 9.2 inches.)

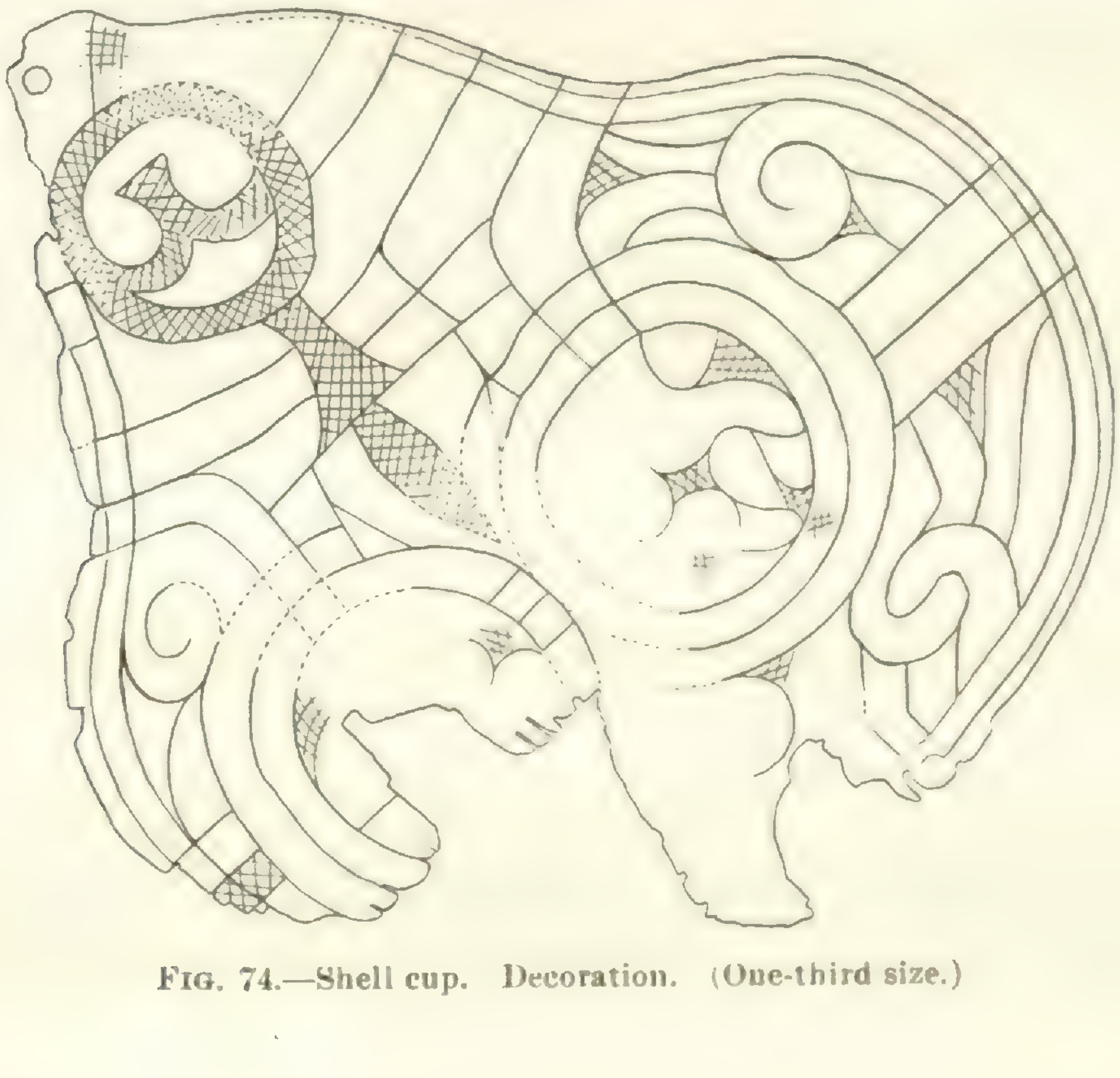


FIG. 74.—Shell cup. Decoration. (One-third size.)

Thirteen trial-holes, some of which were enlarged, came upon twenty-one burials, all so badly decayed that no bones could be saved. These burials lay from near the surface to the very base of the mound, and in form were similar to the others found in this region, namely, the flexed burial. Likewise among the burials were several aboriginal disturbances, and also recent disturbances where postholes for the supports of a house that formerly had been upon the mound, and where small holes, probably dug by the inhabitants of the house, had disarranged parts of burials. Into these holes, which subsequently had been filled but which were still clearly traceable in the mound, recent material had fallen, such as bits of iron, a fragment of glass, and the like.

If we exclude a rude arrowhead of flint found near the left elbow of a skeleton, which may have had an accidental proximity, artifacts were present with but three burials, as follows:

Burial No. 7, a skeleton of an adolescent, lying closely flexed on the left side, had some beads of shell near the pelvis or perhaps associated with wrist bones which were near by.

With Burial No. 18, an aboriginal disturbance, was a banner-stone of altered igneous rock, 1.8 inches in length, in form resembling a prism, triangular with rounded corners. This banner-stone, when found, lay near the knee of the skeleton, though probably its position there may be accounted for by a disturbance which the skeleton had undergone.

Burial No. 20, lying closely flexed on the right side, had shell beads near the pelvis and similar beads which apparently had gone around the neck and which included two tubular beads of claystone, each about 1.25 inch in length.

Mounds near Tucker Bay, Lawrence County.

Near a part of a former course of the river, known as Tucker Bay, and about one mile in a southwesterly direction from Clover Bend, in woods on property of Messrs. F. W. Tucker & Co., of Clover Bend, is a mound 5 feet in height and 47 feet across the base. This mound, of clay, had been dug into to some extent previous to our visit. Owing to the presence of trees and the need to keep the mound intact for the use of stock in times of high water, a central portion only, having a diameter of 25 feet, was removed and subsequently replaced.

In the portion dug by us were found eighteen burials, of which no fewer than nine were of children, including infants. Thirteen burials lay closely flexed, eight on the right side and five on the left. One was partly flexed on the right side; the form of burial of three was not determined owing to their decayed condition; and one was a recent disturbance.

The burials lay from near the surface to the base, one even being in a grave extending 10 inches into the clay underlying the mound. Curiously enough, while the bones of all other burials found by us in this mound were so decayed that their preservation was out of the question, the bones of this skeleton (Burial No. 12) were in fairly good condition, though the skull, unfortunately, was crushed.

Six vessels of earthenware came from this mound.

One from near the surface apparently was not associated with human remains. Its body, hemispherical, is surmounted by a short, slightly everted neck. The ware is inferior and no decoration is present.

Another vessel, or large part of a vessel, had been decorated with deep, parallel, encircling lines; two loop-handles were on opposite sides below the rim.

With a burial were fragments of an undecorated vessel of poor ware, having loop-handles; and with another burial, which had a few shell beads at the neck, were two vessels near the skull. One of these, undecorated, was in many small, disintegrating fragments. The other, badly broken and of soft, inferior ware, had been a bottle with the head of an owl forming the neck. The modeling is rude; the horns of the bird are missing through breakage. There are traces of red paint in places on the vessel.

Another burial had fragments of an undecorated pot, lying near the skull.

Burial No. 2, closely flexed on the left side, had, back of the spine, a mass of calcite wrought in the form of a cone 4.5 inches in length.

Not in connection with burials, though possibly at one time they may have been so, were a rude arrowhead of white flint, a "celt" of medium size, and a gouge 6 inches in length. The two latter objects were presented by us to the owners of the mound.

Two small, flat mounds in the neighborhood of the one just described were dug into by us without success.

Mounds near Clover Bend, Lawrence County.

About three-quarters of a mile in a southerly direction from Clover Bend, in woods, but immediately on the border of a cultivated field, is a mound about 7 feet in height and 60 feet in diameter, on property of Messrs. F. W. Tucker & Co., whose mounds near Tucker Bay have just been described.

This mound had been dug into extensively prior to our coming. No bones or fragments of pottery were to be seen in the material thrown out from previous excavations or in the holes.

When nine trial-holes had been sunk by us to depths between 3 and 5 feet without encountering bone or artifact, further search was deemed unnecessary.

Three other small, flat mounds in the neighborhood yielded nothing to indicate other than a domiciliary use.

Mounds near Lauratown, Lawrence County.

In a field of the Lauratown Farm, which belongs to Mrs. John K. Gibson, of Black Rock, Ark., about 200 yards from the river, are six mounds extending about one-half mile in a straight line in a southerly direction from Lauratown Landing.

These mounds, ranging in height from 2 to 10 feet, have been greatly spread by long-continued cultivation. No fragment of human bone or of pottery was apparent on their surfaces.

All were dug into by us to a considerable extent. In one was a skull in decaying fragments, near the surface, and in another part of the mound was an undecorated bottle of shell-tempered ware (as was all the ware found by us on the Lauratown Farm), having a stone pitted on each side over the opening where a neck formerly had been.

In another of these mounds were fragments of a skull associated with a pot and a bottle, both undecorated, each having parts missing.

About one-quarter mile in a southerly direction from this series of mounds is another, 3 feet in height and 50 feet in diameter, also greatly extended by cultivation. On its surface were numerous bits of pottery, and we were informed that vessels had been taken from this mound. If such is the case, the mound presumably had been a domiciliary one with superficial burials, all of which were removed by former diggers or else by cultivation, for all that rewarded our search, which was a thorough one, were fragments of an undecorated vessel with loop-handles.

The southernmost field of the farm, which adjoins the field in which is the mound last described, is thickly strewn with midden debris, including great quantities of pottery in small fragments, none of which, however, bears decoration of any interest, with the exception of several bits colored bright red.

From the surface of this field was gathered a considerable collection of arrowheads and small chisels, some neatly made. There was also picked up an ear-plug of pottery of a well-known form, namely, that of a pin with thick body and large head.

In the southern part of the field, where debris lay thickest, nine trial-holes were put down without result in a slight rise of the ground which it was hoped might prove to be a cemetery.

Forty trial-holes, some of which were considerably enlarged, were sunk in the extreme southwestern corner of this field, and came upon four burials which were, with one exception, so widely apart, and were accompanied by artifacts of so little interest, that the digging was discontinued.

In a pit, about 2 feet down, lay a skeleton at full length on the back, whose lower extremities had displaced the upper part of a skeleton also originally extended. With this latter burial was a rude, asymmetrical, wide-mouthed water-bottle without decoration, and 2 feet from it a bottle which had been turned on its side at the time of the disarrangement of the burial to which it belonged. This bottle, undecorated, with a long and slightly flaring neck, was carelessly made, being irregular in form as to both body and neck. On the right shoulder and chest of the disturbing burial was a rude bowl whose sole decoration was a series of notches placed obliquely around the rim.

Another burial, an adult at full length on the back, was without artifact.

The skeleton of a child, somewhat disarranged by a blow from a spade in the hands of one of our diggers, had at the skull a pot and a bowl, both small. The bowl bears traces of red pigment inside and out. The pot has two loop-handles at opposite sides, and vertical, notched fillets opposed to each other, above one of which are two slight projections of the rim, while the other has but a single one.

All vessels from this place seemingly were the work of potters without artistic ambition and lacking in care or skill.

Mound near Cornpen Landing, Lawrence County.

This mound, about one mile in an ESE. direction from Cornpen Landing, the property of Mr. Clay Sloan, of Black Rock, Ark., shows no traces of the plow. Its height is 5 feet 3 inches; its diameter, 45 feet. The sides are comparatively steep, giving the mound the appearance of a cone truncated near the base. In the summit-plateau are two comparatively recent graves.

Nine trial-holes, extending to the base of the mound, were without result, save in one instance. Eighteen inches from the surface, below the central part of the summit-plateau, was an ornament of sheet-copper, 4.3 inches by 3.8 inches, having a central concavo-convex boss surrounded by a circle of depressions, which had been placed upon a human skull lying face upward, and had preserved parts of the upper and lower jaws with their teeth, which were stained bright green. No trace of the remainder of the skull was evident, and presumably all other parts of the burial, which probably had been that of a child, judging from the teeth, had disappeared through decay.

The trial-holes in this mound covered it fairly well, and presumably no other burials were in it, though it is impossible to say if originally there had been but a single central burial, or if a number of other burials had been in the mound, all of which had gone without leaving a trace of bone behind, though in this latter event one might have expected to find some artifact.

In three places in the field in which the mound was, where the soil seemed dark and debris of aboriginal occupancy lay upon the surface to a limited extent, unsuccessful digging was done by us.

Mounds on the Upper Hovey Place, Randolph County.

In woods, on the banks of a "lake," or former course of the river, about one-quarter mile northeasterly from the landing on the Upper Hovey Place, the property of Mr. G. H. Hovey, of Pocahontas, Ark., are two small mounds, the larger less than 4 feet in height and about 40 feet in diameter. In this mound, almost entirely dug out previous to our visit, were sunk by us a number of trial-holes in places left by former digging. No results were obtained except to find several small fragments of human bones in material thrown out from earlier holes.

The smaller mound was investigated by us without success.

Cemetery near Mitchell's Log-camp Landing, Randolph County.

About 1.5 mile in a northerly direction through the woods from Mitchell's Log-camp Landing, is the house of Mr. William Anderson. In an enclosure adjoining his house, used for the cultivation of flowers and vegetables, bones had been brought to light in the course of cultivation. Some digging had been done by members of the family.

Many trial-holes sunk by us yielded two skeletons of adults, both closely flexed, one on the right side, the other on the left. There were found also disturbed bones belonging to the skeleton of an adult and to one of a child.

At this point, owing to ill success and on the assurance of our agent, who as we have said, had searched the territory for us in advance, that the region to the northward was not more promising than that we had been over, we abandoned further search on Black river.

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August, 1910.

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Additional Mounds of Duval and of Clay Counties, Florida; Mound Investigation on the East Coast of Florida; Certain Florida Coast Mounds north of the St. Johns River. Privately printed, Philadelphia, 1896. Quarto, 30 pages. Map, plates, illustrations in text.

Certain Aboriginal Mounds of the Georgia Coast. Journ. Acad. Nat. Sci. of Phila., 1897. Vol. XI. Quarto, 144 pages. Frontispiece, map, plates, illustrations in text.

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Certain Aboriginal Mounds of the Central Florida West-Coast; Certain Aboriginal Mounds of the Apalachicola River. Journ. Acad. Nat. Sci. of Phila., 1903. Vol. XII. Quarto, 136 pages. Maps, illustrations in text.

Sheet-copper from the Mounds is not Necessarily of European Origin. American Anthropologist, Jan.-March, 1903. Plates in text.

The So-called "Hoe-shaped Implement." American Anthropologist, July-Sept., 1903. Illustrations in text.

Aboriginal Urn-burial in the United States. American Anthropologist, Oct.-Dec., 1904. Plate.

A Form of Urn-burial on Mobile Bay. American Anthropologist, Jan.-March, 1905.

Certain Aboriginal Remains of the Black Warrior River [Moundville]; Certain Aboriginal Remains of the Lower Tombigbee River; Certain Aboriginal Remains of Mobile Bay and Mississippi Sound; Miscellaneous Investigation in Florida. Journ. Acad. Nat. Sci. of Phila., 1905. Vol. XIII. Quarto, 206 pages. Maps, illustrations in text.

Moundville Revisited; Crystal River Revisited; Mounds of the Lower Chattahoochee and Lower Flint Rivers; Notes on the Ten Thousand Islands, Florida. Journ. Acad. Nat. Sci. of Phila., 1907. Vol. XIII. Quarto, 144 pages. Maps, illustrations in text.

Certain Mounds of Arkansas and of Mississippi (including Doctor Hrdlička's paper on the Crania). Journ. Acad. Nat. Sci. of Phila., 1908. Vol. XIII. Quarto, 130 pages. Maps, illustrations in text, eight colored plates.

Antiquities of the Ouachita Valley. Journ. Acad. Nat. Sci. of Phila., 1909. Vol. XIV. Quarto, 170 pages. Maps, illustrations in text, eight colored plates. (In addition in this number is Doctor Hrdlička's paper on the skeletal remains.)

Antiquities of the St. Francis, White, and Black Rivers. Journ. Acad. Nat. Sci. of Phila., 1910. Vol. XIV. Quarto, 112 pages. Maps, illustrations in text, twenty colored plates.

Some Aboriginal Sites on Mississippi River

BY

CLARENCE B. MOORE

PHILADELPHIA:
1911

MISSOURI
ARKANSAS
TENNESSEE
MISSISSIPPI
LOUISIANA
Gulf of Mexico
New Madrid
Stottle Place
Wilson
Pecan Pt.
St. Francis R.
Rose Mound
Memphis
Helena
White R.
Arkansas R.
Arkansas City
Greenville
Mayersville
B. Bartholomew
Transylvania
Boeuf R.
B. Macon
Yazoo R.
Vicksburg
Ouachita R.
Tensas R.
Natchez
Black R.
Red R.
Baton Rouge
New Orleans
N
MAP OF PART OF MISSISSIPPI VALLEY
Scale in miles
0 5 10 25 50
1911

SOME ABORIGINAL SITES ON MISSISSIPPI RIVER.

By Clarence B. Moore.

This report treats of our investigation of some aboriginal sites along Mississippi river, lying within three miles on each side of the stream or within that distance back from certain dead rivers, so-called, which are former courses of the Mississippi.

The investigation covered the river from New Orleans, Louisiana, to a point somewhat above Wilson, Arkansas, not far from the southeastern boundary of the State of Missouri, a distance of about 775 miles, by water.[1] It occupied one hundred and thirty-one days: parts of November and December, 1910; of January and April, 1911; and all of February and March, 1911.

As has been explained in previous reports, Mr. J. S. Raybon, captain of the steamer from which our explorations are conducted, as has been his custom for many years to do, with a companion, in advance of our coming, went over in a small boat much of the territory which it was our intention to explore, making inquiries at landings, visiting sites, and obtaining the names of their owners, from whom permission to dig could be procured prior to our coming. The time devoted by Captain Raybon to this work was parts of two summers, and the portion of the Mississippi river searched by him was from the northernmost point to which our exploration was conducted down to Natchez, Mississippi. Consequently that part of the river (archæologically an unimportant one at the present time) from Natchez to New Orleans, was investigated by us without the advantage of a previous search made in our behalf.

Unfortunately for the cause of archæology, investigation along the banks of the Mississippi, where in the past numerous Indian villages were, is affected by two adverse conditions. The great river is ceaselessly changing its course, eating into one place and depositing soil at another. Hale Point, Tennessee, a site celebrated for the discovery of interesting relics even in recent times, is now totally destroyed by the encroachment of the stream, while it is likely, on the other hand, that some interesting sites along the river now lie beneath thick layers of alluvial deposit.

Cultivation also is rapidly removing nearly all traces of aboriginal remains—especially the sites on comparatively level ground, in which so many aboriginal burials in the Mississippi river region are found.

[1] Distances by water in this report are taken from the "Map of the Alluvial Valley of the Mississippi River. Published by the Mississippi River Commission, 1907," a publication of the United States Government.

Along the territory immediately bordering the lower Mississippi cultivation has been carried on for so long a time that archæological research there is practically useless.

From New Orleans, La., to Baton Rouge, in the same State, 126 miles by water, our quest was not satisfactory. The land along the river is thoroughly cleared and comparatively thickly peopled, and has been under cultivation for so long a time that one hears but little of aboriginal remains within reach from the river. With but few exceptions along this part of the Mississippi one hears only reports of mounds that have been ploughed away or sees only small parts of them, which have been left by cultivation. Aboriginal cemeteries are unknown.

Between Baton Rouge, La., and Natchez, Miss., 134 miles, following the course of the river, the presence of mounds along the river was comparatively unknown to the inhabitants. With the exception of one mound originally of fair size, about two miles above Baton Rouge, which had been largely dug into in various places, but four small mounds were found by us, although thirty-eight localities along the river were visited and careful inquiries were made.

Continuing up the river, between Natchez and Vicksburg, Miss., 100 miles by water, most careful inquiries were made by us in addition to the search conducted by our agents at the time of their journey of discovery. Nevertheless, our joint efforts resulted in the finding of but three mounds[1] until the interesting group near Glass, Miss., a short distance below Vicksburg, was reached. The mounds near this place will be fully described later in this report.

Between Vicksburg and the Blum mounds,[2] that great group a short distance above Greenville, Miss., about 124 miles as the river runs, many flat-topped and fairly symmetrical mounds, some of medium size, some large,[3] and a few interesting groups of such mounds (including the fine group at Mayersville, Miss.) were visited by us.

While all that part of the Mississippi river under description was carefully searched by us, we believe that conditions north of Vicksburg are such as to facilitate a more successful quest and that consequently few if any sites of importance on this part of the river were passed by us unnoticed. It is true that aboriginal sites are often well back from the present course of the river and are frequently screened from it by trees,[4] but large mounds, singly and in groups, such as seem to be found along this part of the river, are as a rule well known for some distance around, and diligent inquiry, such as was made by our agents, and later by ourselves, must, we believe, almost invariably have led to their discovery.

[1] Near Rodney, Jefferson Co., Miss., about 12 feet high; near Grand Gulf, Claiborne Co., Miss., 12 feet in height, approximately; Locust Mound, Horseshoe Lake, Warren Co., Miss., less than 4 feet in height. The first mentioned mound had been partly washed away; the other two were dug into by us with negative results.

[2] The great group of mounds just above Greenville is described in a former report and is referred to later in this one.

[3] One mound of the group near Transylvania, La., is about 50 feet in height.

[4] Usually a late growth on ground deposited by the river in comparatively recent times, and not forest trees among which sites would be likely to be found intact.

Mounds or groups of mounds, all of considerable size, were found by us between Vicksburg and Greenville as follows:

Near Henderson, East Carroll Parish, Louisiana.
Near Chotard, Issaquena Co., Mississippi.
Near Transylvania, East Carroll Parish, La.
Near Longwood, East Carroll Parish, La.
Near Mayersville, Issaquena Co., Miss.
Near Pilcher's Point, East Carroll Parish, La.
Near Harwood, Chicot Co., Arkansas.

Unfortunately, between Vicksburg and the Blum mounds, though considerable work was done by us, neither bones nor artifacts were discovered.

De Soto's followers saw mounds in use as dwelling-sites for chiefs who lived upon the mounds, with their people on the level ground about them, and long investigation in recent times has shown that many mounds[1] were of this domiciliary class and apparently were not constructed primarily for burial purposes.

Some of these large, flat-topped mounds which had every appearance of having been domiciliary, were dug into superficially by us, while others had so suffered by wash of rain that the making of excavations in them seemed useless, in view of the fact that in the rare cases when domiciliary mounds contain burials, such burials are near the surface.

A few mounds in use as modern cemeteries were closed to us.

Though there is but little hope of the discovery of relics of any kind in domiciliary mounds, they nevertheless are of great importance in an investigation, since they mark former centers of aboriginal life, and as life and death go hand in hand, the presence of these mounds indicates where cemeteries are or have been.

As the reader of that part of this report describing the more northerly sites investigated by us will learn, aboriginal burials there were found by us in level ground, in rises, and in ridges, on the surface of which almost invariably lay various indications of former aboriginal life, in the shape of fragments of pottery, bits of flint, and remnants of human bones, etc.

Though elaborate search was made by us and some digging was done in the ground surrounding the mounds between Vicksburg and Greenville, no indication whatever—superficial or interior—of the presence of aboriginal cemeteries was found; nor was there any reliable history of the finding, at any of these sites, of anything indicating the presence of aboriginal burials.

It is our belief that this absence of cemeteries from the region under discussion lies in the fact that the long cultivation to which the land has been subjected has destroyed all aboriginal burials that formerly were there, and that this occurred at a time beyond the remembrance of those now alive and when general interest in archæological matters was so slight that the discovery of human bones and of artifacts was allowed to pass unrecorded.

[1] We would explain that in the use of the word "mounds" reference is made to symmetrical mounds or to those that seem to have been such, and not to rises of the ground, or ridges, or flat, elevated areas that have grown up under occupancy, which often contain burials.

From Greenville to the point where our season's investigation ended, 295 miles by the river, though many sites have been destroyed by cultivation, some still remain, and all those where successful work was done by us will be particularly described in this report. A number of other sites in this region, however, in which our quest was unrewarded, though much work was done in some of them, will not be referred to.

Throughout our season's work there were found by us sixty-five skulls of the aborigines, in good condition, and a considerable number of other parts of the skeletons, all of which were sent as a gift to the United States National Museum. Dr. Aleš Hrdlička, Curator of the Division of Physical Anthropology in the Museum, will, we trust, describe these remains at a later period.

That part of the Mississippi river whose aboriginal sites are described in this report is included in the Lower and Middle Mississippi Valley regions—geographical divisions (among others) made by Holmes[1] to facilitate his description of aboriginal pottery, in certain of his exhaustive memoirs on the subject, to which the reader of this report is particularly referred.

The Middle Mississippi Valley region is defined by Professor Holmes as follows, in writing of its pottery:[2] "Apparently its greatest and most striking development centers about the contiguous portions of Arkansas, Missouri, Illinois, Kentucky and Tennessee. The area covered is much greater, however, than would thus be indicated; its borders are extremely irregular and are not as yet at all clearly defined."

As a boundary line between the Lower and Middle Mississippi Valley regions has not as yet been definitely determined, we would suggest that the Arkansas river and an imaginary line extending eastward from its mouth be considered as such, not only because the geographical position of the river fits it to serve as the basis of such a division, but for the reason that the aboriginal pottery of the Arkansas river possesses the distinctive features belonging to the ware of both the region above and the region below that stream.

North of the Arkansas river incised decoration on earthenware is comparatively seldom encountered, and when it is present among the great number of undecorated pieces, it is, as a rule, of inferior execution, often consisting of hardly more than a series of parallel lines. Incised decoration, excellent in design and in execution, is rarely met with north of the Arkansas river.

On the other hand, south of that river engraved, incised, and trailed decoration on pottery is the rule rather than the exception, and vessels marked by beautifully incised decoration are not infrequently found.

In the Middle Mississippi Valley region, north of the Arkansas, pottery with decoration in color—solid red or polychrome—is often found.

South of the Arkansas, however, the use of pigments for decoration of pottery

[1] William H. Holmes. "Ancient Pottery of the Mississippi Valley," Fourth An. Rep. Bur. Ethn. William H. Holmes. "Aboriginal Pottery of Eastern United States," Twentieth An. Rep. Bur. Am. Ethn.

[2] Twentieth An. Rep. Bur. Am. Ethn., p. 80.

was rather infrequently resorted to, and while some few vessels from this region have solid coatings of red, they are exceptional and they usually bear incised decoration in addition. Vessels with polychrome designs are very exceptionally met with in the Lower Mississippi province.

Human effigy vessels are comparatively abundant in the region lying north of the Arkansas river, while south of that river vessels of this type are seldom found.

There can be no question that north of the Arkansas the average quality of the ware and the character of the modeling are inferior to those of the region to the southward.

The pottery of the Arkansas river, as we have said, shares the distinctive features present in that of both territories. Incised decoration, as well as the use of pigments for decoration of pottery, are abundantly evident in the valley of the Arkansas.

Vessels representing the human form, are fairly numerous along the Arkansas, but are not found there in the same numbers they are met with in regions farther north.

In the sites of the Arkansas river also are many vessels resembling the less-carefully made ones of the region to the north, while many others, in excellence of ware and beauty of form and of decoration, call to mind the better work of the Lower Mississippi Valley.

As the reader possibly may care to inquire further as to the pottery of these regions, we would suggest that the two memoirs of Professor Holmes, already cited, and "Contributions to the Archæology of Missouri, Part I, Pottery," [1] and our "Antiquities of the St. Francis, White and Black rivers, Arkansas," [2] treat of the pottery of the Middle Mississippi region.

The aboriginal pottery of Middle Tennessee, which we presume may be classed as belonging to the Middle Mississippi region, is described in General Thruston's work, "Antiquities of Tennessee."

The ware of the Lower Mississippi Valley region is considered by Professor Holmes in the Twentieth Annual Report of the Bureau, and, in part, in our "Antiquities of the Ouachita Valley." [3]

The earthenware of the Arkansas river is partly described in Holmes' memoirs already referred to; in his "Collection from Arkansas County" [4]; and in our "Certain Mounds of Arkansas and of Mississippi, Part I. Mounds and Cemeteries of the Lower Arkansas River." [5]

In parts of this report reference will be made to the exact number of earthenware vessels found by us at various sites under description. To assume that all these vessels are entire would be incorrect; in fact but few of them are so. It is our endeavor to convey an idea of the approximate total of vessels placed by the

[1] Dr. Edward Evers.
[2] Journ. Acad. Nat. Sci., Phila., Vol. XIV.
[3] Journ. Acad. Nat. Sci., Phila., Vol. XIV.
[4] Third An. Rep. Bur. Ethn., p. 476 *et seq.*
[5] Journ. Acad. Nat. Sci., Phila.' Vol. XIII.

aborigines in such parts of the sites as were dug through by us, and hence each vessel found is counted as one, no matter how fragmentary it may have been at the time of its discovery.

Various causes contributed to the mutilated condition of numerous vessels. Many were more or less broken by aboriginal disturbance,—grave cutting through grave,—while others, soaked with water and consequently softened, gave way under the pressure of the soil, in the course of years, and were crushed to fragments. Numbers of vessels also, reached in process of cultivating the ground in recent times, were hopelessly ruined by breakage—not alone shattered by the plow, but having parts irretrievably carried away.

There is still another factor contributing to lessen the proportion of entire vessels discovered. Although the ceremonial breaking of earthenware vessels did not obtain in the region under description, the thrifty aborigines were prone to utilize imperfect vessels for interment with the dead, and hence the discoverer often comes upon bottles without necks or with only parts of necks; bottles which, having had basal supports, have them in part only or are without them; other vessels from which important parts are missing, including bowls once decorated with modeled heads and tails but which have them no more.

Another fact to emphasize, especially in connection with the Middle Mississippi Valley region, is the large proportion of inferior earthenware placed with the dead in some of the sites—vessels of inferior texture and of ordinary form—often asymmetrical—without decoration of any kind, with the exception perhaps of beaded or notched margins, or possibly a few rude lines of incised decoration. We do not believe it possible for those familiar with the pottery of this region only through visits to museums, or by inspection of illustrations of selected specimens, to have any conception of the small proportion of really interesting vessels found in some aboriginal sites in the region in question. It has been our fortune there, more than once to unearth fifty successive vessels without coming upon one presenting any feature of especial interest, either in the way of elegance of form or of decoration, or of oddity of design.

The large proportion of vessels of inferior ware and of commonplace form, carelessly modeled and scarcely decorated, or without decoration, found among the mortuary tributes of pottery made by the aborigines of the Middle Mississippi region, arises, we think, from the great quantity of pottery in use in that region in aboriginal times. The time required for the making of this superabundance of vessels perhaps bred carelessness of manufacture in respect to much of the ware, and set the potters working in a perfunctory way, as is exemplified by the great repetition in the form of the vessels and in their decoration.

The pottery obtained by us in a broken condition, that seemed desirable to place on exhibition in the Academy of Natural Sciences of Philadelphia, where all our collections may be seen, has been cemented together, with slight restoration in some cases, always made in a way to be distinguished from the original.

The reader is referred to a recent publication of the Bureau of American Ethnology for a full and interesting account of the aboriginal tribes of the Lower Mississippi Valley [1]—this region, of course, not of necessity coinciding as to boundaries with the one to which the same name has been given in order to facilitate descriptions of its pottery.

All measurements of objects described in this report are approximate, and reduction in size in the illustrations of them is linear.

Dr. M. G. Miller, who, as anatomist of the expeditions, has taken part in all our previous field work and in putting all our reports through the press, aided the investigation again this season.

Mr. S. G. Weir, as assistant, gave valuable aid in a number of ways, and Captains J. S. Raybon, commander of our steamer, and Hugh W. Nixon of Memphis, Tenn., a Mississippi pilot since 1850, contributed to the success of the expedition.

The thanks of the Academy are tendered Prof. F. A. Lucas for the identification of bones of lower animals; Dr. H. A. Pilsbry and Mr. E. G. Vanatta for determination of shells; Mr. F. J. Keeley for identification [2] of minerals and rocks; Dr. H. F. Keller for chemical determinations; Mr. Stewart Culin for valuable information; Miss H. N. Wardle for suggestions, and aid with the index; and Mr. F. W. Hodge for literary revision of the report.

The Academy also wishes to express its gratitude to the owners of plantations along the Mississippi river and various dead rivers tributary thereto, who, without exception, in the most liberal manner, placed their property at its disposal for investigation and most courteously did everything in their power to insure the success of the expedition.

We shall now take up in detail some of the sites investigated by us in this season's work, as a rule including only such as yielded tangible results, though many other sites, as we have said, were visited and a number were dug into by us, some to a considerable extent.

[1] John R. Swanton. Bulletin 43. "Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico."

[2] For obvious reasons we have not furnished sections for the microscope, cut from objects submitted to Mr. Keeley, who consequently has not been able to make as exact determinations as he otherwise could have made.

MAP OF PART OF MISSISSIPPI RIVER

SITES INVESTIGATED.

(Lower Mississippi Valley.)

Near Shaw Field, Pointe Coupée Parish,[1] Louisiana.
Trudeau, West Feliciana Parish, La.
Near Glendale Landing, Concordia Parish, La.
Near Ellis Cliff, Adams County, Mississippi.
Near Oak Bend Landing, Warren County, Miss.
Near Glass, Warren County, Miss.
Shadyside Landing, Washington County, Miss.
Richland, Desha County, Arkansas.
Near Neblett Landing, Bolivar County, Miss.

(Middle Mississippi Valley.)

Avenue, Phillips County, Ark.
Kent Place, Lee County, Ark.
Johnson Place, Tunica County, Miss.
Commerce, Tunica County, Miss.
Rhodes Place, Crittenden County, Ark.
Mound Place, Crittenden County, Ark.
Bradley Place, Crittenden County, Ark.
Pecan Point, Mississippi County, Ark.
Stoffle Place, Mississippi County, Ark.

Mounds near Shaw Field, Pointe Coupée Parish, La.

About one mile in a WNW. direction from Shaw Field, which is on the river's bank, are two mounds, near together, in woods, on property of Messrs. James and Emmett Cotton, of Raccourci, La.

The larger mound, somewhat more than 6 feet in height, is almost square as to its base, with a diameter of about 100 feet. Eleven trial-holes sunk into the summit-plateau showed the mound to be of rather raw clay into which graves, none of which found by us exceeding 2 feet in depth, had been dug from the surface in places. Five burials were encountered, four of the bunched variety, and one, badly decayed, which seemingly had been a skeleton closely flexed on the left side.

Of the four bunched burials one consisted of bones with which apparently no skull had been placed; one had three skulls; one, five skulls; and one had seventeen skulls. All the bones were badly decayed.

The only objects found with the burials were three flat pebbles: two with one burial, one with another.

The smaller mound, resembling the other in shape, seemed not to have been used for burial purposes, as our digging came upon only clay unmixed with organic matter.

[1] The State of Louisiana uses the term *parish* to designate that division of the commonwealth which in every other State in the Union is known as a *county*.

Site at Trudeau, West Feliciana Parish, La.

Immediately at Trudeau Landing is a farm with a residence somewhat back from the river. At one side of this house is black soil, indicating former aboriginal occupancy. Through part of this ground ran a small road, from the side of which, we were informed by the occupant of the house, an intelligent colored man, a brass kettle had been uncovered by wash of rain. While digging into this place, after the discovery of the kettle, we were told, various objects of iron or of steel were unearthed, and also a pipe, probably of catlinite (Fig. 1), which we obtained.

Fig. 1.—Pipe of catlinite. Trudeau, La. (Full size.)

Seven trial-holes put down by us near where the kettle had been discovered, failed to come upon graves, though dwelling-site debris was encountered in places.

Mound near Glendale Landing, Concordia Parish, La.

In woods about 1.5 mile in a northerly direction from Glendale Landing, on property belonging to Mr. J. M. Davis, resident nearby, is a mound irregularly circular in outline, having a basal diameter of about 100 feet. The present height of the mound, which is said to have been trampled down somewhat by cattle who seek it at times of overflow, is about 4 feet. As this place of refuge is highly prized by its owner, its destruction by us was wholly out of the question.

The mound apparently contains many burials, as eight trial-holes came upon seven interments, and in the removal of these, eight more were discovered. These fifteen burials, all in graves let down from the surface, none deeper than slightly more than 2 feet, were nine of the bunched variety and six of adults extended on the back, one of which had lost a leg through aboriginal disturbance.

Although bits of pottery were scattered throughout the mound, probably refuse material gathered with the soil, but one vessel was found with the burials. This vessel (Fig. 2), which lay near the skull of a child, forming part of a bunched burial, is a small, flat bowl, having as decoration a design in the main composed of partly interlocked scrolls, alternate scrolls filled in with reticulate lines, and having a flat, circular base slightly projecting, in the center of which a hole has been made—possibly by a root.

Fig. 2.—Earthenware vessel. Glendale Landing, La. (Diam. 4.8 inches.)

Two burials, a bunched and an extended one, were accompanied with masses of red pigment; while a large bunched burial, having fifteen skulls, had a lump of red paint and a bit of yellow ochre about 2 inches in diameter, concave on one side, where doubtless material for use as paint had been worked out.

An extended burial had red and yellow pigment near the skull, and a small, flint[1] arrowhead with triangular blade and a shank for attachment.

Apart from bones in the soil was a slender, barbed arrowhead of flint.

Mound near Ellis Cliff, Adams County, Miss.

About one mile in a southerly direction from Ellis Cliff, on rising ground forming part of the hills that here approach the river, was the remnant of a small mound which had been dug into previous to our coming. Investigation of the parts remaining yielded two burials and parts of two others. One skeleton lay closely flexed on the back, the knees being drawn up toward the chin. Another was closely flexed on the right side. Two skeletons which had been interred side by side, closely flexed on the right side, had lost heads and shoulders by the making of another grave in aboriginal times.

No artifacts were present with these burials.

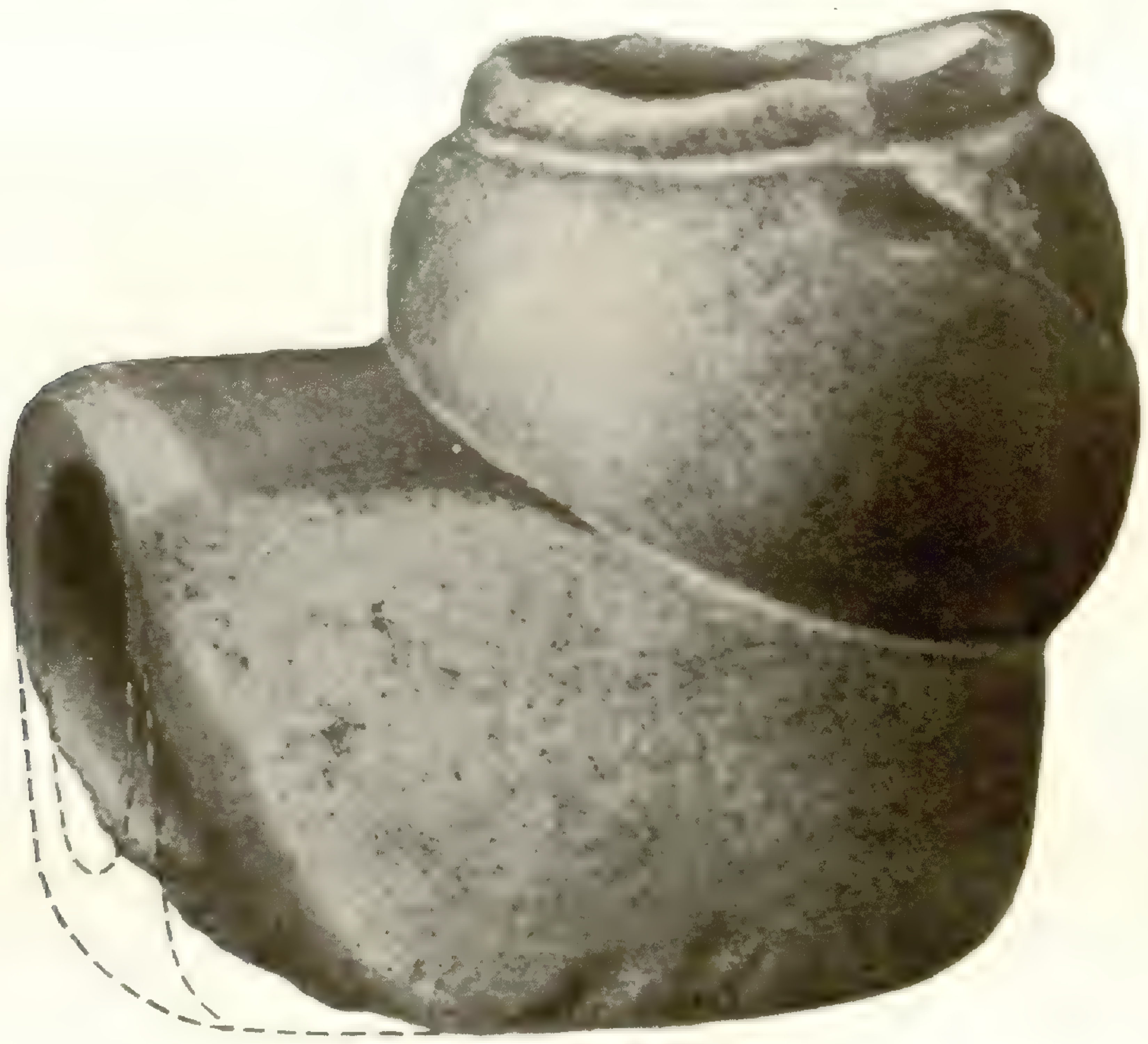

Fig. 3.—Pipe of sandstone. Church Hill, Miss. (Full size.)

At Gum Ridge, Jefferson County, Miss., a settlement on the river, Mr. T. G. Wood of that place, kindly presented to the Academy a gracefully shaped celt, probably of metamorphic rock, and a pipe of sandstone, having a rounded bowl but rectangular in transverse section as to the part intended for the reception of

[1] The term "flint" is used in a general way in this report to include chert and other closely allied rocks.

the stem (Fig. 3). The celt and the pipe, Mr. Wood informed us, were found by a colored man at Church Hill, a short distance from Gum Ridge, and probably were uncovered by the plow.

Mound near Oak Bend Landing, Warren County, Miss.

A few feet from the water's edge at Oak Bend Landing, is a mound of irregular outline, about 50 feet and 60 feet in basal diameters, and 3 feet high, approximately. Persons long resident in the neighborhood report the mound, which they say once was considerably higher, to have been graded to serve as a foundation for a house, and subsequently to have suffered additional loss in height through wash of water. The house had disappeared at the time of our visit, but a cistern, which no doubt had belonged to the house, was present in the mound.

Trial-holes in this mound came at once upon human remains, and two days were devoted by us to the investigation of what probably had been a small burial mound.

Unfortunately much digging into this mound had been done by others, as there was great disturbance of bones and of artifacts, in places, and numerous corroded nails of iron were found in the course of our digging, which presumably had been left on the surface of the mound at the time of the demolition of the house, and had been introduced into the mound through various excavations.

Owing to all this disturbance and to the advanced state of decay in which the skeletal remains were found, the exact score of burials and their classification were hard to determine. Twenty-eight burials were noted by us, mostly belonging to the bunched variety, but a few burials of adults extended on the back, and the skeletons of several children also were present in the mound.

Three individual burials had the skulls covered by inverted bowls which fitted the skulls like caps.

Some of the bunched burials were extensive, one having no fewer than thirty skulls (many in fragments) and a great quantity of other bones, though we were not in a position to say whether or not the full complement of bones for the number of skeletons represented by the skulls was present. The skulls of the bunched burials, as a rule, were heaped together at one side of the burial.

In most instances singularly few artifacts lay with the bunched burials, when the number of individuals these burials often represented is taken into account. For instance, the burial we have cited (which included with the rest the skulls of two adolescents and of three children) was accompanied with a single vessel of earthenware. This, however, was an extreme case, other bunched burials having been somewhat more liberally provided. For instance, Burial No. 7, a large, bunched burial with many skulls, had associated with various parts of it: twelve earthenware vessels; fragments of corroded sheet-brass or copper; glass beads; a rude disk of bituminous coal, about 2.5 inches in diameter; powdered hematite in two places.

A feature of this burial was the presence of several toy vessels of earthenware, put in near bones of children.

With a number of burials in this mound were glass beads, and with some were fragments of sheet-brass or of sheet-copper—sheet-brass certainly in some cases. The mound, therefore, is post-Columbian.

We shall now describe the artifacts present with some of the burials.

Burial No. 13 was the skeleton of an adult, extended on the back. At the head was an earthenware vessel in fragments; a bottle lay at the feet. On the chest of the skeleton and extending to one side of it lay a small bunch of human bones with which no skull was found. Lying above this bunch, but possibly deposited for the lower burial also, were a number of objects in line, overlapping each other to some extent, as follows: an imperfect flint arrowhead; a chisel wrought from a flint pebble; a polished celt of flint, 4 inches in length; two celts of sedimentary rock, 5.25 inches, and 6.75 inches in length, respectively; a tool or weapon of iron or of steel, about 5 inches in length, badly corroded; and, together, five lance-points and knives of flint, two broken; one leaf-shaped implement of flint, 3.5 inches long; and a bit of rock-crystal.

Burial No. 20, a bunch having eleven skulls, including two of adolescents, was accompanied with two earthenware vessels. Near a skull, not on each side of it, but placed together, were two disks of indurated clay, each about 1.24 inch in diameter and .75 inch in thickness. The surface of these disks is polished and seems in addition to have received a coating of some dark material. The periphery of each disk shows a slight projection all the way round on each side (Fig. 4). Presumably these objects were ear-plugs, though the projecting parts seem inadequate to have held the ornament in place unless it exactly fitted the opening in the lobe of the ear.

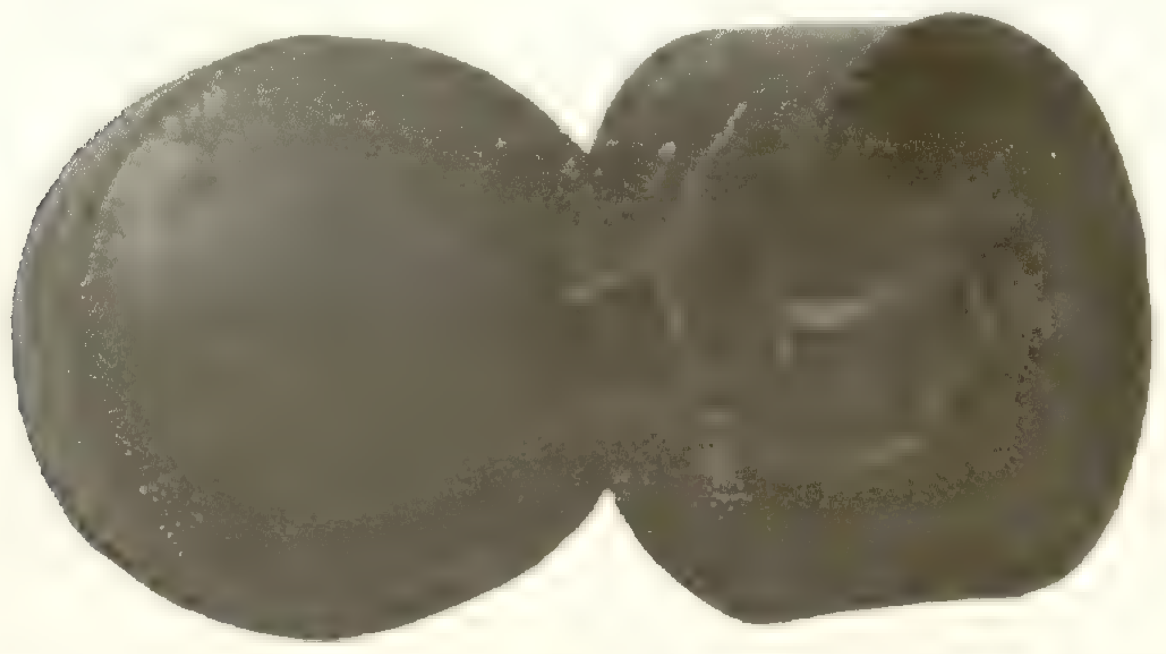

FIG. 4.—Ear-plugs of indurated clay. Oak Bend Landing, Miss. (Full size.)

Burial No. 26, of the bunched variety, having twenty-five skulls (one of which had belonged to an adolescent and four to children), had in association four vessels of earthenware, variously placed, and, together, one arrowhead of flint and three pebbles. With this burial also was a circular object of indurated clay, 1.3 inches in diameter, centrally perforated, concave on both sides. The two faces of this object, which perhaps was an ear-plug, are polished.

Burial No. 28 consisted of a single skull over which was an inverted bowl. We have classed this burial among individual ones in the belief that the remainder of the skeleton had disappeared through decay or in the great disturbance to which the mound had been subjected. Beside the covering bowl stood another vessel, and near the skull and just below the rim of the bowl over it were two chisels wrought from pebbles of flint.

A few objects lay in the mound apart from burials. These objects, which probably owed their position to disturbance, were: a small celt of diabase; a chisel made from a flint pebble; an ornament 1.25 inch in length, fashioned from the axis

of a marine univalve (*Fulgur*), including a small part of the whorl, perforated longitudinally; a flat pebble about 3 inches in length, chipped on opposite sides near the smaller end to facilitate attachment to a handle, perhaps for use as a pebble hammer.

A sample of pigment from this mound is reported on by Dr. H. F. Keller as follows: "That marked 'Site at Oak Bend, Warren Co., Miss.,' is a red ochre containing about 40% of clay and silica and about 60% of hydrated oxide of iron. It is intensely red throughout its entire mass and is coarsely granular and gritty."

Forty-six vessels of earthenware, mostly in small fragments, were recovered from this mound. The ware, as a rule, is inferior to that found in the mound near Glass, only two miles distant. Ten of the vessels are without decoration; most of the others bear incised or trailed designs, some, however, crude and scanty.

One fragment of a vessel which apparently had been coated with red pigment was the only evidence encountered of the use of paint in the decoration of earthenware in this mound.

Several of the better class of vessels from the Oak Bend Landing mound will now be described in detail.

Vessel No. 10. This bottle (Fig. 5), with low, wide neck, is of hard and com-

Fig. 5.—Vessel No. 10. Oak Bend Landing, Miss. (Height 6 inches.)

paratively thin ware. The modeling is symmetrical; the trailed decoration has been executed by a firm and practised hand. It is interesting to note that practically the same decoration may be seen on a vessel from near Menard Mound, Arkansas river, Ark., figured[1] by us.

Vessel No. 8. A bottle 5.5 inches in height, with low, wide mouth, bearing a trailed design largely composed of circles between lines, some curved, some straight. The design is rather faintly executed and consequently wanting in effect.

Vessel No. 24. A bowl having a modeled head of an animal and a conventional tail, both rising vertically from opposite sides. Within the head, the jaws of which are extended, are objects which rattle when shaken. Around the body are two trailed, encircling lines, rudely done, enclosing diagonal lines. On the base a six-pointed star is incised. Diameter 6.5 inches.

Site near Glass, Warren County, Miss.

About one mile NNE. from Glass, a station on the Yazoo and Mississippi Valley railroad, on the plantation of Mrs. J. P. Cline, of New York City, which is under the management of Mr. William G. Paxton, of Vicksburg, Miss., are four mounds forming a very irregular circle with a diameter of about 420 feet. Some distance north of these mounds is another, much spread and worn, on which is a house.

None of these mounds was erected as a place of refuge in time of flood, for although they are on ground subject to occasional overflow, they are not ten minutes' journey from the hills which approach the river at this place.

The largest mound of the group composing the so-called circle is 30 feet in height and is still rather symmetrical, though wash of rain has already scarred the upper part. The basal diameter N. by E. and S. by W. is 180 feet; E. by S. and W. by N. it is 167 feet. The diameters of the summit-plateau in the same directions respectively, are 60 and 64 feet.

Fourteen trial-holes in this plateau failed to come upon artifact or bone.

Two other mounds of the four composing the circle have been greatly mutilated. One, about 6 feet in height originally, has been partly cut away in making a road, while the other, curtailed on one side by the same road, has been in part washed away on the opposite side by a small bayou, and has been leveled to a considerable extent to serve as a foundation for a building which formerly stood upon it. Both these mounds were unsuccessfully dug into by us.

The fourth mound of the circular group has a height of 15 feet. NNE. and SSW. its diameter of base is 149 feet; ESE. and WNW. it is 128 feet. The diameters of the summit-plateau, respectively, in the same directions are 39 feet and 59 feet. This mound, however, has been under cultivation practically over its entire surface, and a narrow spur, protected from the plow by a tree, projects from a corner of the summit-plateau a distance of 13 feet, thus showing that the plateau

[1] "Certain Mounds of Arkansas and of Mississippi," Fig. 19. Journ. Acad. Nat. Sci., Phila., Vol. XIII.

has been worked away through cultivation by at least that number of feet on one side.

Although, as the reader is aware, digging into the flat tops of domiciliary mounds is seldom productive of positive result, occasionally burials are found in these plateaus or in parts of them.

Trial-holes in the summit-plateau of the mound in question came upon several vessels of earthenware, all near the surface. Consequently it was decided to dig completely through that part of the plateau (about three-quarters of its present area) where indications of graves were found.

Human remains were encountered but twice and consisted of some crumbling teeth of a child, 1.5 feet down, and the left humerus of an adult, 2 feet below the surface. In both instances these remains were accompanied with deposits of pottery, extending some distance from them, and evidently were all that was left of entire burials.

In other instances artifacts were present, singly and in groups, where no burials were apparent, though beyond question they had been present but had disappeared through decay.

There came from this mound, in addition to vessels of earthenware: several polished pebbles, evidently smoothing-stones for pottery; a discoidal stone roughly shaped from a pebble; a flat pebble chipped toward one end, on two opposite sides, probably to facilitate attachment to a handle; a small quantity of powdered hematite used for paint, of which Dr. H. F. Keller says it "is an impure, ferruginous clay. It is very red on the outside, but yields a red-brown powder on grinding which turns brick-red on ignition. It contains 72.5% silica, showing that the clay is mixed with considerable sand."

Associated with pottery, and lying side by side, were two cylinders of yellow clay material, crumbling and in many fragments, varying from .8 to 1.1 inch in diameter. These cylinders had been decorated with longitudinal parallel lines, placed near together. It seems as if possibly the cylinders had been compressed in molds, as a small longitudinal ridge is evident on one side. We were unable to determine the length of these cylinders, which fell into many fragments on removal, but the deposit, as it lay in the ground, was 15 inches in length. We could not learn if this was the length of a single cylinder or included part of one projecting beyond the other. Each of these cylinders possessed one rounded end which came from opposite extremities of the deposit. The character of the end opposite the rounded one we were unable to determine, though we think it likely that the objects had been what is known as spade-shaped implements and that their upper parts had crumbled away.

Thirty-five vessels of earthenware were scored by us as coming from this mound, though the count was of necessity imperfect as only two whole vessels were encountered, the surface of the mound having been dug into and ploughed in a way to break most of the pottery contained in the graves.

The ware from this place contains little if any shell tempering. It is fairly

thin, and, as a rule, of medium excellence. Various forms of the bowl predominate. The principal feature in connection with the pottery uncovered from this place is the great proportion of decorated vessels. In point of fact, but one wholly undecorated vessel, or part of a vessel, was met with in the mound.

With the exception of a vessel having a design of red and of cream-colored pigments upon it, all others from this mound bear incised or trailed decoration to a greater or less extent. This decoration is largely conventional and often based on the scroll, as is so frequently the case with pottery in the Lower Mississippi region.

The following vessels from this place are deemed worthy of particular attention.

Vessel No. 7. This superb bottle, of thin, hard, black ware, by the exactness of the spacing and the freedom shown in the execution of the design, is in the front

FIG. 6.—Vessel No. 7. Glass, Miss. (Height 6 inches.)

rank among vessels from the Lower Mississippi region, whose aboriginal potters, when their best efforts were exerted, excelled all others in incised decoration, in the region now known as the United States. The regularity of the lining on this vessel and the evenness of the cross-hatch work are remarkable (Fig. 6).

Vessel No. 24. This handsome bottle has a well-executed, incised decoration clearly shown in the illustration (Fig. 7). The ware is thin and hard, and this piece may be considered a good example of the better, but not of the best, pottery of this region.

Vessel No. 1. This vessel (Fig. 8), which we think may be classed as a bottle, is of hard, yellow ware, and bears an incised design based on circles, triangles, and the swastika.

FIG. 7.—Vessel No. 24. Glass, Miss. (Height 5.75 inches.)

FIG. 8.—Vessel No. 1. Glass, Miss. (Height 4.3 inches.)

FIG. 9.—Vessel No. 8. Glass, Miss. (Height 3.5 inches.)

FIG. 10.—Vessel No. 6. Glass, Miss. (Diam. 6.3 inches.)

FIG. 11.—Vessel No. 18. Glass, Miss. (Height 6 inches.)

Vessel No. 8. This vessel of yellow ware (Fig. 9) bears as decoration an incised design of mediocre workmanship, based on scrolls and circles.

Vessel No. 20. A bowl of excellent brown ware tempered with material other than shell, belongs to a class representatives of which were found by us in the Neblett Landing Mound, Miss., which will be described later in this report. The type of vessel referred to consists of an inverted, truncated cone, the sides being in various degrees of expansion. In this particular case the bowl, with a circular, flat base about 3.5 inches in diameter, has a height of only 3.1 inches, while the diameter of the vessel itself is 11.1 inches, so that the expansion is marked.

Vessel No. 12. A bottle 7.2 inches in height, with globular body and short, slender neck constricted below the opening, which is flaring. The decoration in white and brick-colored pigments has been executed with considerable care and consists of partly interlocked scrolls of white and of red around the body, and a red triangle at the flat base. The neck has a uniform coating of red. This bottle, the

FIG. 12.—Vessel No. 36. Glass, Miss. (Height of pot 4.7 inches.)

pigment of which is in excellent condition, is especially interesting in that it comes from a site in the Lower Mississippi valley, in which region polychrome decoration on earthenware is exceptional.

Vessel No. 6. A bowl of yellow ware (Fig. 10) having an incised decoration of crescentic figures.

Vessel No. 18. A bottle of yellow ware (Fig. 11), from which, unfortunately, the upper part of the neck has been ploughed away. Around the body is a band in relief. The incised decoration, which is rather faint, is based on the swastika, with curious, trefoil figures in addition.

Various slight rises of the ground in different parts of this plantation, on which were a few scattered signs of aboriginal occupancy, were investigated by us but without success. Probably places of burial at these sites had been destroyed in the course of long cultivation of the soil.

There were presented to us here fragments of a vessel which we were told had washed from a bank. This vessel (Fig. 12) is of very coarse, shell-tempered ware, and entirely unlike that found by us in the mound. On each of two opposite sides of the vessel is modeled in relief a long-bodied quadruped somewhat similar to the lizard-like figures present on a vessel found at Madisonville, Ohio, and figured by Professor Holmes.[1]

On the modeled figures on our vessel, however, ears are represented, which feature presumably takes these figures out of the reptilian class. An opening for suspension is present between the body of each animal and the side of the vessel.

Blum Mounds, Washington County, Miss.

This noble group of mounds at Winterville, near Greenville, Miss., explored and surveyed by us during a previous visit, is fully described in our "Certain Mounds of Arkansas and of Mississippi."[2]

Site at Shadyside Landing, Washington County, Miss.

Near Shadyside Landing are three mounds which would be in full view from the river but for the presence of trees. Near these mounds are various small ridges and flat elevations which evidently, in the past, were aboriginal dwelling-sites, though much of their superficial parts apparently had disappeared through work, wear, and wash.

We are indebted for permission to examine this site to Mr. J. H. Leavenworth of Greenville, Miss., its owner.

The mound nearest the landing, of irregularly circular outline, with basal diameter of 166 feet, has a height of about 13 feet. Trial-holes sunk into its summit-plateau yielded no return.

In full view from this mound is another, somewhat larger but much spread, and evidently considerably reduced in height through wash of rain and trampling

[1] Twentieth An. Rep. Bur. Am. Ethn., Pl. CLXIIIa.
[2] Part III. "The Blum Mounds." Journ. Acad. Nat. Sci., Phila., Vol. XIII.

of feet. In fact a house built upon the mound, resting on supports, has beneath it a part of the mound about 2 feet higher than the rest of its surface which has been washed and worn away while the portion under the house has been protected. In Fig. 13 is shown this house under which may be seen the ground rising as described.

Within a few feet of this mound is the third one, having a circular base about 95 feet across. The height is 7.5 feet. Our digging in this mound was not rewarded.

FIG. 13.—House on mound at Shadyside Landing, Miss., showing part of mound under the house, protected from wash of rain, and illustrating the erosion to which mounds sometimes are subjected.

A short distance in a northwesterly direction from the mound nearest the river is a small, flat rise in the ground, on which were some fragments of pottery and other debris. This area was fairly riddled with our trial-holes, which showed that burials had been put down from a higher level, but that most of them were near the surface owing to the amount of material which had been ploughed and washed from that part of the site.

There were found here fifteen burials, as follows:

Adults at full length on the back, including two adolescents	13
Adult, aboriginal disturbance	1
Bunched burial, consisting of the bones of three adults and of one adolescent	1

With the bunched burial were the crumbling remains of a small earthenware vessel.

A few feet east of the ridge we have described was another or perhaps an extension of the mound. The surface of this ridge was covered with fragments of pottery, and bits of human bone were plentiful on it.

This ridge or extension was thoroughly investigated by us, but unfortunately it became evident that nearly all the made ground which had formed during aboriginal occupancy had been worked or washed away, as but two burials were found—one a bunch having a single adult skull; the other, a burial of the same class with ten skulls, three of which had belonged to children. The upper part of this burial was visible on the surface, while none of it lay more than one foot deep.

With the latter burial were three vessels of earthenware: one of medium size, having a body with four lobes, without decoration; another badly crushed, on which were two encircling incised lines; a third (Fig. 14) having a round opening and a square, flat base on which are a number of concentric, incised squares. The body of the vessel has incised, encircling lines, containing diagonal ones.

FIG. 14.—Vessel No. 3. Shadyside Landing, Miss. (Height 3.5 inches.)

With this burial also were part of a small celt of fine-grained sandstone, and, dangerously near the surface, a fine pipe of limestone (Plate XXIX), representing a human figure on hands and knees. The pipe lay on its side directly beneath the bones, which had somewhat disintegrated the parts of the pipe in contact with them. Both sides of this pipe are shown in the plate, the one injured by the bones being easily distinguishable.

On the surface, near this burial, was a small, barbed arrowhead of white flint. The barbed type of projectile point was very rarely found by us on the Mississippi north of this place, the leaf-shaped point usually being met with.

Scattered in the soil were found, apart from burials, in the Shadyside Landing site: two small, rude celts; a pebble shaped somewhat to resemble a celt; another pebble showing a slight amount of workmanship, and grooved at one end to serve as a pendant; a pebble probably of igneous rock, with an artificial semi-perforation at one end; part of an antler 5.5 inches in length, squarely severed and with a considerable hollowing out of the proximal end; a number of small chisels chipped from flint pebbles, which differ from chisels of the same material found farther north on the river in that these are chipped but not ground at the edges which, moreover, are flaring.

SHADYSIDE LANDING, MISSISSIPPI, PIPE OF LIMESTONE. (ABOUT FULL SIZE.)

COCKAYNE, BOSTON.

All other ridges and rises at this interesting place were carefully dug into by us, but while it was evident they were of artificial origin, it was also apparent that the parts in which burials probably had been, had washed or worn away.

Site at Richland, Desha County, Ark.

Richland, a settlement belonging to the Price, Ledbetter Land Company, of Richland, includes the De Soto Plantation. About one mile north of Richland, in woods, on property belonging to the Company, is a large, flat-topped mound which has been extensively used for burials in recent times.

One of the houses on the main road in Richland, on the De Soto Plantation, stands upon a low, much-spread mound. On one side of this house seven trial-holes were put down, all of which reached burials. In removing these burials others were found, making a total of eighteen, none at a depth greater than 3 feet. The bunched burial was not represented, all being individual burials, some extended on the back, some flexed. All were of adults except one of an adolescent and one of a child. Two of the burials, lying side by side, had lost heads and shoulders by the digging of a hole some time in the past.

At the legs of one burial were a few small, shell beads, and some powdered hematite was near the skull of another. Near the feet of an extended burial was an undecorated vessel of moderate size, cylindrical, with slightly flaring rim and a base moderately convex.

Although doubtless the mound contained a great number of interments, we felt disinclined to continue its exploration, especially as the position of the house and out-buildings upon it precluded all idea of its complete demolition.

Within a short distance of the mound just described is an almost imperceptible rise in the ground, of limited extent, the soil rather dark in shade and having on the surface numerous fragments of pottery. Investigation of this site, however, indicated that it had not been used for burial purposes.

Mound near Neblett Landing, Bolivar County, Miss.

Back of Neblett Landing is the old Neblett Place, now known as Virginia Plantation, the property of Mr. Charles Scott of Rosedale, Miss.

About two miles in a NE. by E. direction from the landing there is on this plantation a mound about 7 feet in height. It is nearly square and has a summit-plateau. The entire mound has been under cultivation that has rounded its corners and extended its diameter, which, at the time of our visit, was about 125 feet. Trees on the side of this mound show it to have suffered extensive wash of rain, the roots of one tree being exposed for 2.5 feet above the present surface. The mound, however, presumably, has suffered more extensively from wash of water on the sides than on the level top. Nevertheless, it was evident that the plateau also had suffered to a considerable extent, as fragments of pottery and of human bones lay on it in numbers at the time when our work was undertaken. Moreover, some burials were found partly uncovered by the plow, and presumably many more had been totally destroyed.

In shape this mound has every appearance of having been a domiciliary one, and our digging in it, which lasted two and one-half days, with seven men, confirmed this view, for while the mound contained many burials in the summit-plateau and part-way down the sides, it was evident that these had not been made during the building of the mound, but had been sunk from the surface, after its completion.

The mound was composed largely of raw clay material, some parts of it having more sand than others. The graves, none deeper than 3 feet, which was an exceptional depth, had been dug into this material, which had a distinctive color, making it easy to define the limits of the graves from the surface down on account of the presence in them of the dark village-site material from the outer parts of the mound. Presumably, then, a domiciliary mound had been utilized superficially as a place of burial.

Sixty-five burials came from this mound, of which forty-four were bunched burials. Three of these latter were noteworthy in that, instead of having the long-bones in layers or in piles horizontally, they were arranged almost vertically in the ground.

The bunched burials, in regard to the number of skulls found with each of them, were as follows, the skulls having belonged to adults, when not otherwise described:

Without a skull, 1

With a single skull, one being of an adolescent and one of a child, 20

With two skulls, four having each the skull of a child and one that of an adolescent, 14

With three skulls, including the skull of an adolescent, 2

With five skulls: four adult skulls and one of an adolescent; four adult skulls and one of a child; three adult skulls, one of an adolescent, and one of a child, 3

With six skulls, one being that of a child, 1

With seven skulls, including one of a child, 1

With eight skulls, two being of children, 1

With twelve skulls, including two of children and one of an adolescent, 1

The remainder of the burials were:

Adults at full length on the back, 16

Children, 3

Recent disturbances, 2

The bones at this place were badly decayed, none being in a condition for preservation.

In connection with eight burials—five bunched burials and three extended ones—bark was present, usually below the burial, but exceptionally, above it. Presumably, however, other burials in the mound had been accompanied with bark, which had disappeared through decay.

The only objects, except earthenware vessels, found in the soil apart from burials, were a pebble-hammer and a piercing implement of bone.

Singularly few artifacts, except earthenware, had been placed with burials in this mound. A bunched burial which included the bones of a child, had a pebble

rudely fashioned to form a discoidal stone. With a bunched burial lay a flat pebble perforated at one end. Pebbles thus treated are not often met with. One, similar to that from this place, was unearthed by us in the site at Avenue, Ark., and will be referred to later in this report, while three other perforated pebbles were found by us on the lower Arkansas river, and one at the Forrest Place, near the mouth of the St. Francis river, Ark.

Ninety-one vessels of earthenware lay with burials in this mound and six vessels were found apart from them.

The bunched burials at this place had their full share of earthenware vessels, the deposits with some of the larger burials being greater than those with smaller ones.

Burial No. 17, a bunched burial, consisting of six skulls of adults and one of a child, lay upon bark, and had with it thirteen vessels, an interesting feature being that some of these are diminutive and evidently had been placed with the burial on account of the child included with it.

Burial No. 33, a bunch in which were eight skulls, two of them having belonged to children, was accompanied with eight vessels, and here again toy vessels intended for children were present.

Of the ninety-seven vessels from the Neblett Landing mound, twenty-four were unbroken or nearly so, most of the remainder being badly crushed.

The ware from this mound is not of the best, and no vessel shows a polished surface. A few of the vessels exhibit fairly graceful modeling and some diversity of form, though, curiously enough, the bottle is present in but few instances. A favorite form of vessel at this place is one somewhat resembling an inverted, truncated cone, which is represented among the vessels found no fewer than thirty-seven times, with various modifications, of course, including a considerable expansion of the body.

Decoration is a marked feature of the pottery from the Neblett Landing mound, only nine of the ninety-seven vessels found being entirely without it, though in some instances the decoration present is scanty enough, being only a single, incised encircling line, or a line arranged in festoons.

The decoration in the main consists of line-work,—engraved, incised or trailed,—fairly well executed in some instances, but much of it of mediocre or inferior workmanship, as is the case in nearly all sites where this kind of decoration on pottery is employed. There is great repetition of design on the ware, the partly interlocked scroll, the current scroll, the spiral, festooned lines, loops surrounding circles (some of these in connection with rude cross-hatch work), all doing yoeman service as they are so often called upon to do in connection with incised decoration on aboriginal pottery in certain regions.

Decoration in color is present on but two vessels from this place—a design in red and white in each instance. On the whole, the earthenware of the Neblett Landing site is interesting, as this site is the northernmost one investigated by us on the Mississippi river where line decoration is a feature, though line decoration, as we have already said, is often present on aboriginal pottery from sites on the Arkansas river, which enters the Mississippi only a few miles above Neblett Landing.

We shall now take up the description of certain of the more interesting vessels from this place.

Vessel No. 56. This vessel (Fig. 15) is a shallow bowl in the form of a shell, the hinge of which, in all its details, is carefully and accurately reproduced. The

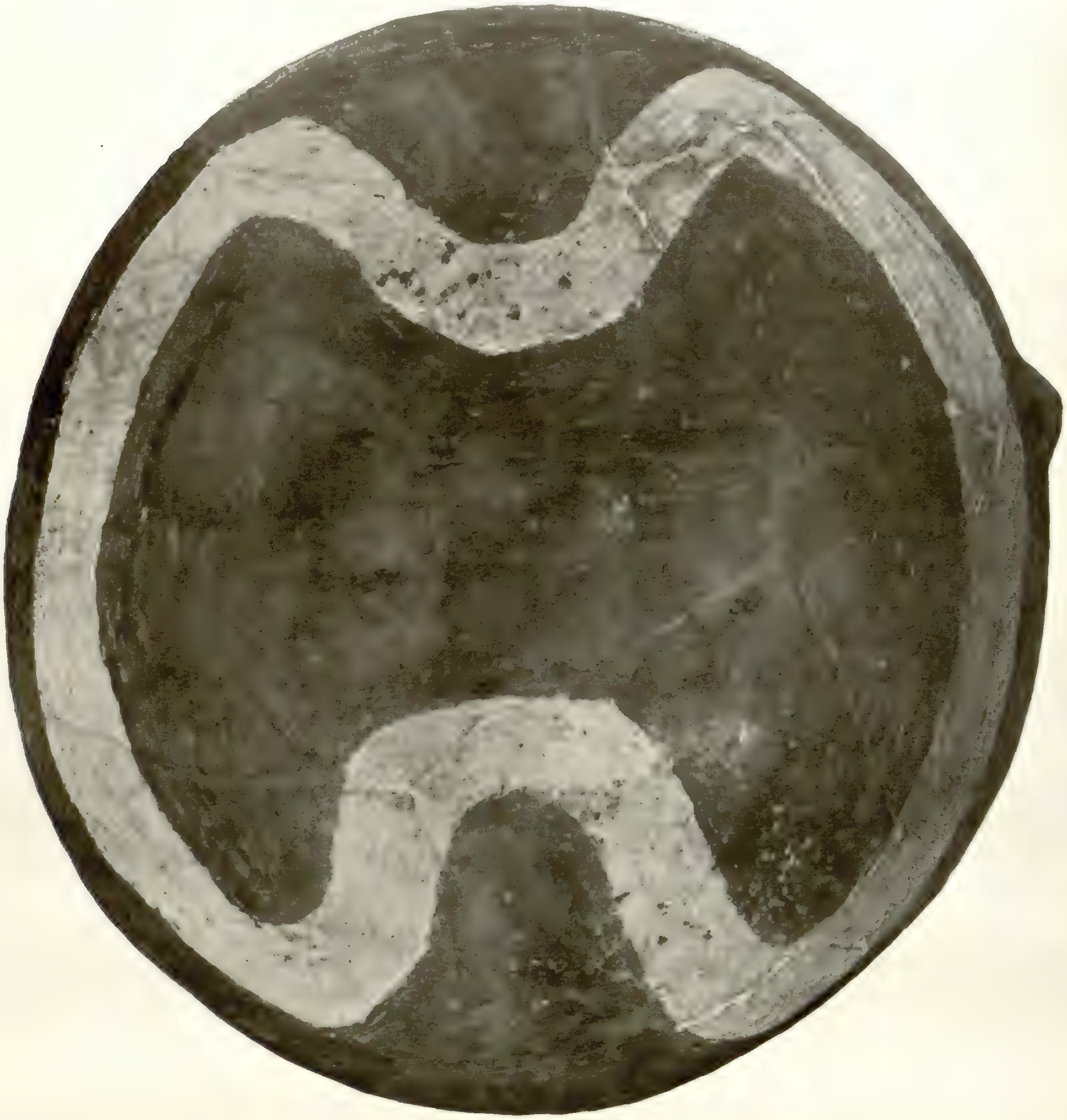

Fig. 15.—Vessel No. 56. Neblett Landing, Miss. (Diam. 11.2 inches.)

model taken by the aboriginal potter, according to Doctor Pilsbry, was probably the fresh-water mussel (*Unio purpuratus*). The outline of this shell, however, as Doctor Pilsbry points out, is elliptical, while that of the bowl is round. It is quite possible, nevertheless, that the outline of the vessel was modified to suit the needs of a bowl. The decoration on this vessel has been a coating of cherry-colored pig-

ment on the inside, now partly worn away, and on the outside a well-preserved design, hour-glass in shape, perhaps current scrolls united, in white pigment on a background of cherry. Both colors are remarkably well preserved. In this vessel we see polychrome decoration south of the Arkansas river, but a very short distance south of it, it is well to bear in mind.

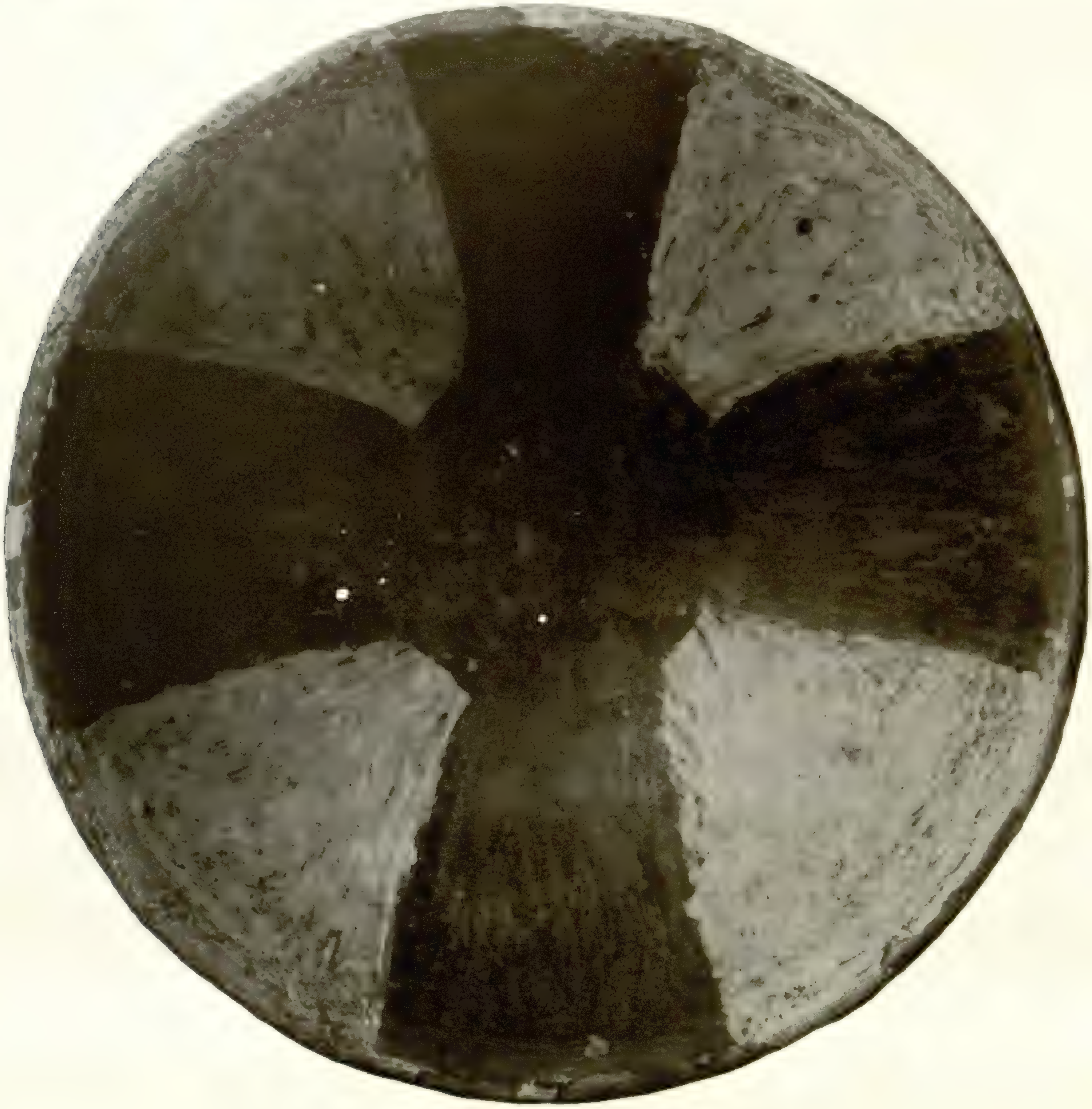

Fig. 16.—Vessel No. 28. Neblett Landing, Miss. (Diam. 8.3 inches.)

Vessel No. 28. This bowl (Fig. 16) bears by way of decoration on the inside a circle of solid red pigment from which extend four arms in red, forming a cross. The background is pigment of cream color. The exterior decoration is a cross of cream color with arms expanding somewhat toward the extremities, and having a background of red.

Vessel No. 22. This interesting vessel of the well-known "teapot" variety (Fig. 17), which will be discussed more fully in this report in our account of the

FIG. 17.—Vessel No. 22. Neblett Landing, Miss. (Height 5.9 inches.)

FIG. 18.—Vessel No. 5. Neblett Landing, Miss. (Height 4 inches.)

site at Avenue, is to a certain extent a variant from the usual "teapot" vessel in that a modeled frog surrounds the neck. There has been restoration of one leg of this modeled figure, which, however, does not show in the illustration.

Vessel No. 5. We have here a vessel of compound form representing a circular bowl set on a kind of saucer. The incised decoration is based mainly on the scroll. There is a single hole for suspension, on two opposite sides (Fig. 18).

FIG. 19.—Vessel No. 71. Neblett Landing, Miss. (Diam. 8.3 inches.)

Vessel No. 71. This bowl, of the form prevailing in the Neblett Landing site, bears on the body an incised design consisting of a well-known combination where a current scroll has each of its loops arranged to include a circle (Fig. 19).

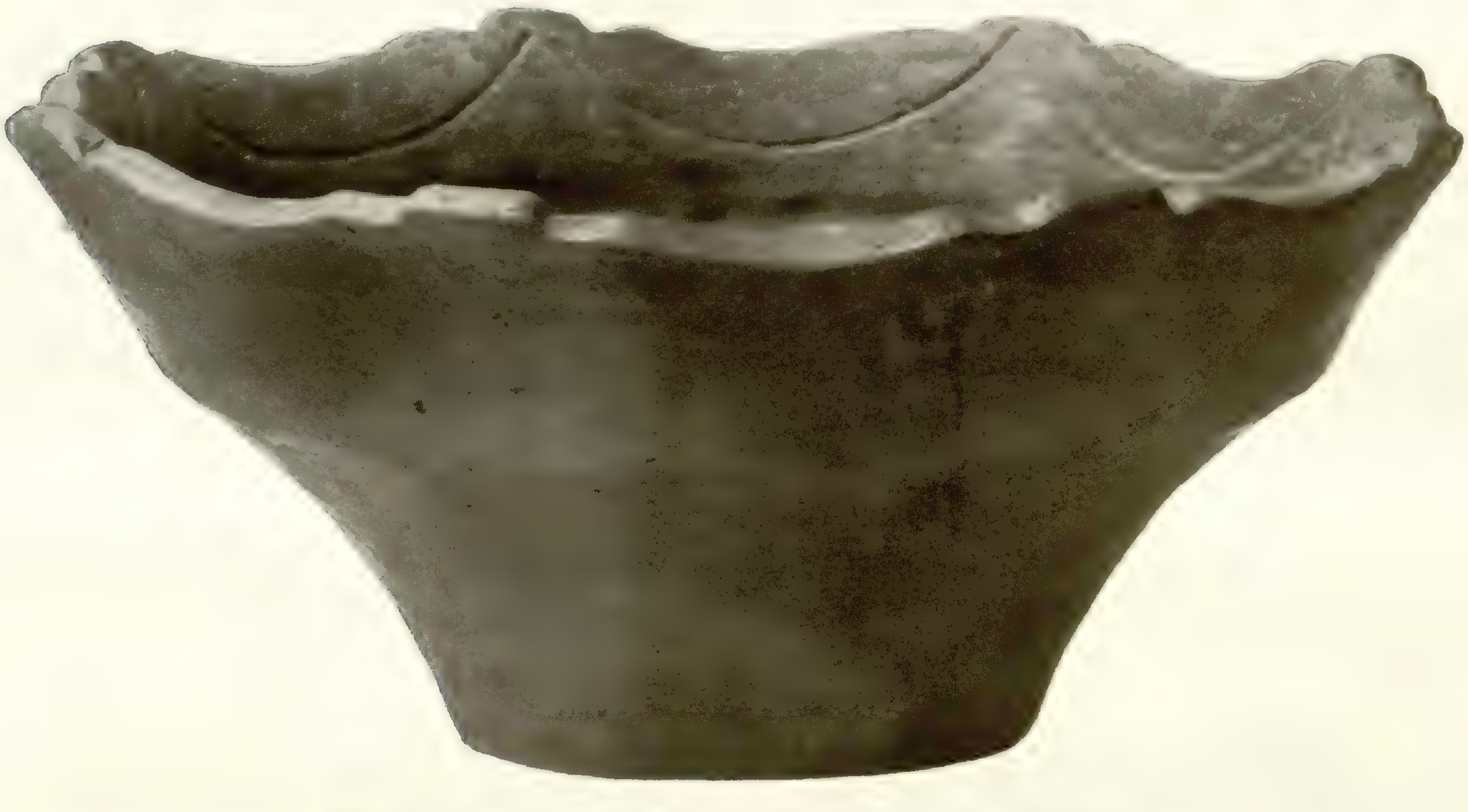

FIG. 20.—Vessel No. 90. Neblett Landing, Miss. (Diam. 6 inches.)

Vessel No. 90. A bowl of the same type as the preceding vessel as to form, but having a graceful finish to the margin, as shown in Fig. 20.

Vessel No. 96. This bowl, a life-form representing a shell, is similar to vessels found to the northward in the Middle Mississippi region, where, however, they are usually without decoration. But this vessel, being from a region where incised decoration was in vogue, has on the outside a design based on the swastika, and on the front, upper part, within (though it does not show in the illustration), an incised band filled in with crossed, diagonal lines (Fig. 21).

FIG. 21.—Vessel No. 96. Neblett Landing, Miss. (Height 3.3 inches.)

Vessel No. 19. This vessel, also representing a shell, resembles in form the bowl just described and on the inside is similarly decorated. On the outside, in front, incised scrolls extend around circles, while behind are two bands with crossed, diagonal lines, similar to the single band in front. Height 4.2 inches.

Vessel No. 55. A bottle of inferior ware, having projecting from one side a tail, and from the other side the head of a bird or of a quadruped, from which the bill or nose is missing through breakage prior to interment. On two sides of the bottle are rude, incised designs, possibly representing wings (Fig. 22).

Vessel No. 52. This bottle, of light brown ware, bears on the body an incised decoration composed of the circle and the scroll (Fig. 23).

Vessel No. 69. There is shown in Fig. 24 an inverted bowl of light brown ware, which is undecorated on the inside, but bears on the exterior a well executed trailed design based on the scroll.

In sight of the mound just described is another, considerably larger, the surface of which apparently has not been under cultivation. It is said that this mound has been used largely for burial purposes in comparatively recent times, and

FIG. 22.—Vessel No. 55. Neblett Landing, Miss. (Height 4.1 inches.)

evidence of this in the shape of headboards marking graves is still apparent on one part of the mound. A number of trial-holes sunk in the summit-plateau of this mound were unproductive.

FIG. 23.—Vessel No. 52. Neblett Landing, Miss. (Height 3.6 inches.)

Between the two mounds was level ground which had been long under cultivation. On the surface were scattered some debris from aboriginal sites and a few fragments of human bone. A considerable number of trial-holes in this ground came upon three burials, with one of which was an inferior vessel of earthenware.

FIG. 24.—Vessel No. 69. Neblett Landing, Miss. (Diam. 6.5 inches.)

Here ends the description of our work in the Lower Mississippi region. The next site to be considered lies north of the Arkansas river and consequently in the Middle Mississippi valley.

Site at Avenue, Phillips County, Ark.

At the settlement of Avenue is a plantation belonging to Mr. R. B. Goalder, who resides at Avenue.

On this plantation, in full view from the road, is a much-spread mound on which are a frame building and a number of out-houses. This mound, no doubt, was the domiciliary high place of the site.

About one-quarter mile in a SSW. direction from this mound, still on the property of Mr. Goalder, is a ridge about 120 feet by 240 feet, and from 2 to 6 feet in height, depending on that part of the surrounding area (which is far from level) whence the altitude is taken.

Here and there on the surface of this ridge, which we were told had been under cultivation about six years, bits of flint pebbles, fragments of pottery, burnt clay, and particles of human bone were observed.

A few yards westerly from this ridge is another, about 125 feet by 95 feet and approximately 3 feet in height, which had almost contiguous another ridge 85 feet by 70 feet and about 2 feet in height. These two ridges are on a plantation belonging to Mr. A. Martin of Henrico, Ark., and are said to have been under cultivation for two seasons only. At the time of our visit trunks of trees were still standing in the field in which these ridges were. On the larger of these two ridges were a few fragments of human bones and indications of aboriginal occupancy in the past, but the smaller site had no superficial debris.

Three days, with seven men to dig, were spent by us in the investigation of the three ridges mentioned, which were composed of clay so tenacious that the sounding-rod was of little avail and trial-holes only were of service.

Burials and artifacts were encountered in the two larger ridges only, the burials being sixty-two in number, all in graves extending from the surface down, none to a depth greater than 2 feet. Some burials already had been disturbed by cultivation, and it was evident that in a few years more the plow would have destroyed the majority of them.

The burials were as follows:

Adults at full length on the back, 3

Adults partly flexed on the right side, 9

Adults partly flexed on the left side, 2

Adult closely flexed on the left side, 1

Adult extended on the back to the knees, with the legs closely flexed on the thighs, 1

A lone skull, 1

Recent disturbances, of considerable extent, 3

Infants or children, 3

Bunched burials, 39

The bunched burials, in layers or piles of bones, sometimes without skulls, sometimes with a number of them, were not determined as to the exact number of

complete skeletons present, and it is doubtful if such determination were possible in the badly decayed condition in which the bones were found.

The bunches, with the number of skulls with each (the skulls being of adults when not otherwise described), were as follows:

Bunches without skulls, 6

Bunches with one skull each, 9

Bunches with two skulls each, including one bunch having one skull of a child, 11

Bunches with three skulls each, including one bunch with a child's skull, 6

Bunches with four skulls each, including one bunch having a skull of a child, 4

Bunches with six skulls each, including three skulls of children in one bunch, 2

Bunch with seven skulls, 1

The last mentioned burial had about 8 inches above it a few bits of calcined human remains.

On the surface of this site were no entire artifacts, and in the soil, apart from burials (with the exception of pottery) nothing was found save a single chisel wrought from a flint pebble.

But three burials at this place were accompanied with artifacts other than pottery.

Burial No. 6, a bunch, had in addition to a bottle and two bowls, two long pins or piercing implements of bone.

Burial No. 33, a bunched burial, had near it a flat pebble, oval in outline, about 2 inches long and 1.5 inch in maximum diameter. Near the margin of the broader part is a perforation for suspension. We have referred to perforated pebbles of this kind in our account of the site at Neblett Landing, in this report.

Burial No. 48, a bunched burial, had two bottles and some red oxide of iron ground for use as pigment.

Seventy-five earthenware vessels (one of which was apart from human remains) came from the site at Avenue, the vessels being with the bunched burials as frequently as with the single skeletons, though some burials of both classes were without pottery. Vessels in some instances lay one within the other, and occasionally small, inverted bowls covered the openings of bottles.

As a rule, in most sites in the Middle Mississippi region, where pottery is present, and in regions to the southward also, though perhaps to a less extent, mussel-shells (*Unio*) are often found in vessels, on them, or near them. These shells were used as spoons. No such shells were present with any vessel at Avenue.

The ware from this place is thin, as a rule, and often of the yellow, porous kind so adaptable to decoration with pigment. This class of decoration is present in seventeen instances on the pottery found at Avenue by us, thirteen being uniform coatings of red, while in four cases red appears in connection with white or cream-colored paint.

Many undecorated vessels of this soft, yellow ware, in addition to the painted ware, and a few vessels of dark material but ill-fired, were in a friable condition

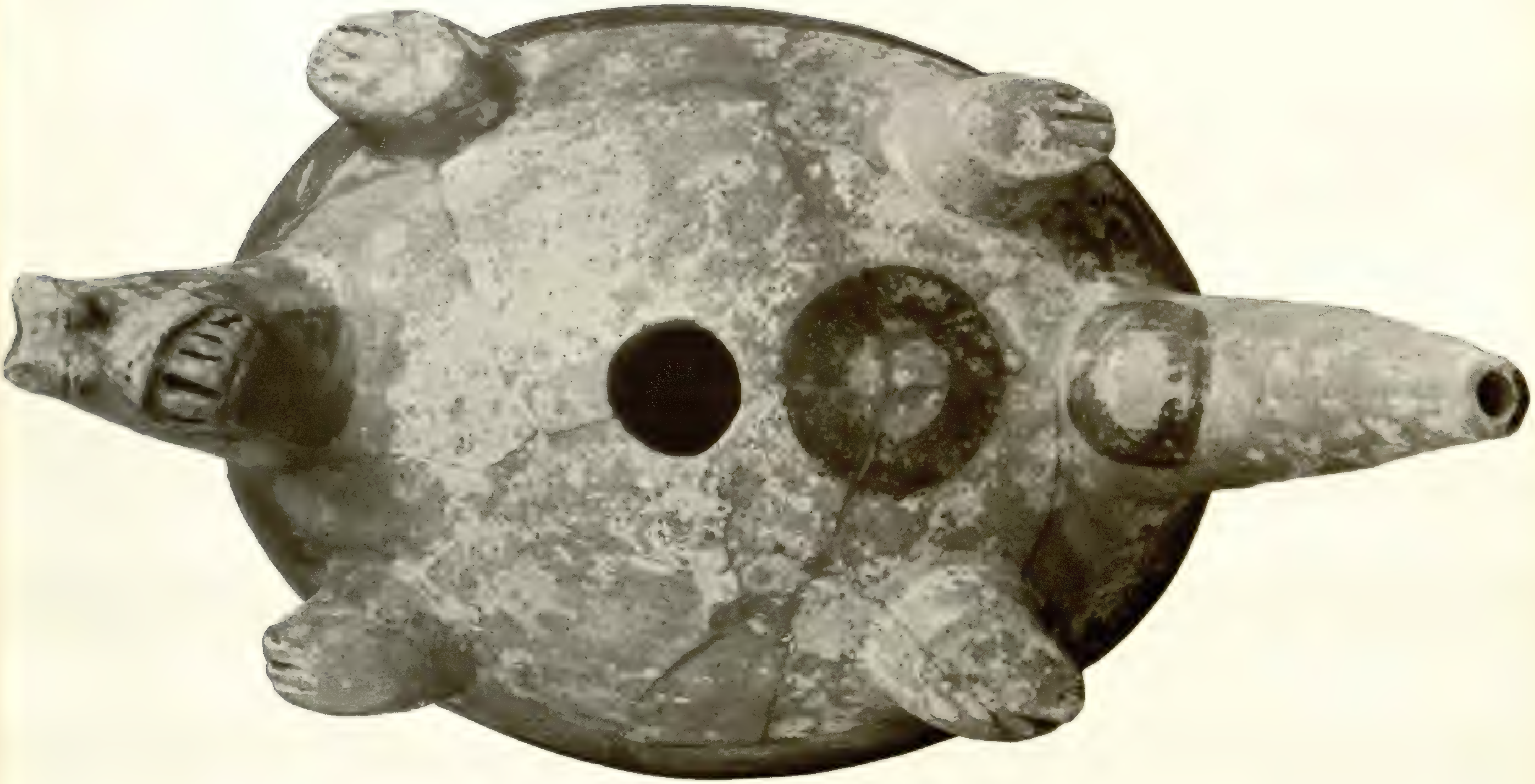

FIG. 25.—Vessel No. 20. Avenue, Ark. (Length of body 8.9 inches.)

and badly crushed. Two interesting vessels belonging to a better class of this painted ware have been repaired, and later will be described in detail.

Among the vessels found at this place were two bowls with slight, rude, trailed decoration; one small bowl having a series of rough, single, festooned lines, incised exteriorly around the margin, in which were rude imprints of a pointed implement; a vessel having six small lobes; a vessel with small, pointed knobs near the rim.

Among the vessels decorated with red pigment was one with a conventional tail of an animal, but which had lost the head through breakage in early times, and another with the modeled head of a predatory bird, but having suffered partial loss of the caudal appendage.

Vessel No. 20. There is shown in Plate XXX, and in another position in Fig. 25, the most interesting vessel of the "teapot" variety which has yet come to our notice. This vessel, which possibly represents a tortoise or a turtle (though the head is far from resembling that seen on any of the order *Chelonia*), shows the animal lying on its back with legs extended upward, the toes of the hind feet directed backward in a manner forcibly indicating the habit of the tortoise and turtle family. The only other vessel of the "teapot" variety portraying a life-form placed upon the back, that has come to our knowledge, is one found by us in the Rose Mound on the St. Francis river, Ark., but in this case legs and feet are not represented.

The decoration on this "teapot" vessel from the site at Avenue consists of an excellent coating of red pigment covering the lower part of the body. Red pigment also is on the eyes and on the upper and lower part of the head and the under portion of the tail or spout. Two circles, one at the base of the tail and one near it, on the belly, probably representing the female sexual organ and the vent, likewise are shown in red. The remainder of the vessel, except the base, where the yellow ware is without decoration, has had a coating of cream-colored pigment.

Incidentally, we may repeat here what we have detailed in former reports to a considerable extent. The "teapot" vessel, so far as the United States is concerned, is found only in eastern Arkansas and nearby regions, its centre of distribution being the territory along the lower Arkansas river, though it has been found northward as far as the Rose Mound[1] near Parkin, on the St. Francis river, Ark., and southward near the junction of Bayou Bartholomew[2] with the Ouachita river, in northern Louisiana, where, however, probably it was carried in trade.

The "teapot" vessel has been found in Coahoma county, Miss., but not far removed from the river,[3] and Professor Holmes figures a vessel belonging to the same class as coming from "Mississippi."[4]

[1] Clarence B. Moore. "Antiquities of the St. Francis, White and Black Rivers, Arkansas," Pl. XVIII and Fig. 31.

[2] Clarence B. Moore. "Antiquities of the Ouachita Valley," p. 75. Journ. Acad. Nat. Sci., Phila., Vol. XIV.

[3] Charles Peabody. "Exploration of Mounds, Coahoma County, Mississippi." Peabody Museum Papers, Vol. III, No. 2, Pl. XIV.

[4] William H. Holmes. "Aboriginal Pottery of Eastern United States," p. 94, Pl. XLb. Twentieth An. Rep. Bur. Am. Ethn.

AVENUE, ARKANSAS. VESSEL NO. 20. (LENGTH OF BODY, 8.9 INCHES.)

COCKAYNE, BOSTON.

AVENUE, ARKANSAS, VESSEL NO. 8. (HEIGHT, 4.6 INCHES.)

COCKAYNE, BOSTON.

Another vessel of this class, from the site at Neblett Landing, Bolivar County, Miss., is described in this report.

As the reader probably is aware, the ordinary variety of "teapot" vessel has a sub-globular body with a knob on one side and a spout on the opposite side. The variants are animal forms, the spout taking the place of the tail.

It may be interesting to note in respect to the "teapot" vessel that this form, which almost entirely is confined to the State of Arkansas, does not seem to be found in the same territory as the well-known head vases, which also are a specialty of the same State, the head vessels being found more to the northward. As we shall have occasion to point out when writing of these vessels, the Rose Mound on the St. Francis river, Arkansas, may be considered, so far as records go, the northernmost point where "teapot" vessels have been found and the southernmost limit of discovery of head vases.

Vessel No. 32. This bottle, 10.5 inches in height, found in seventy-two fragments, has been cemented together and proves to be of graceful form, the body globular with a flattening at the base, the neck of medium length, slender and slightly constricted below the opening, which has a decided flare. The decoration, consisting of partly interlocked scrolls in red and white pigment, has, in addition, in spaces between the scrolls, indications of black coloring material, now largely worn away. The neck has a uniform coating of red. This bottle in all respects resembles a class of vessels found in sites along the Arkansas river.

Vessel No. 68, a bottle with graceful, globular body, and flat base, has a slender neck, constricted toward the opening where it flares sharply. The decoration on body and neck is a uniform coating of red pigment. Height of bottle, 9 inches; length of neck, 3.5 inches.

Vessel No. 27. A bottle of yellow ware, having as decoration on its globular body with flattened base, six vertical, elliptical bands of red and white pigment alternately. Between the bands is a separating space showing the color of the ware. The slender neck, 3.5 inches in height, flaring at the aperture, has been coated with red pigment, much of which still adheres. Height 10.1 inches.

Vessel No. 43. A bowl, parts of which were not recovered, has as decoration inside and out a coating of red pigment. On one side, projecting vertically, is the modeled head of a predatory bird, and on the opposite side a conventional tail extending horizontally.

Vessel No. 8. The bowl shown in Plate XXXI, though slightly asymmetrical, is of considerable interest. On one side, in relief, are modeled the snout, mouth, eyes, and ears of some animal, probably a raccoon. Red pigment covers much of the upper part of the vessel, the rest of which has had a coating of light pink or cream-colored pigment, traces of which still remain. The interior of the bowl also has a coating of red paint above, and traces of cream-colored paint are present on the lower part.

The Kent Place, Lee County, Ark.

The Kent Place is on the left side of a dead river, going up, about five miles above its union with the Mississippi, which is eighteen miles approximately, by water, above the St. Francis river. This plantation belongs to Mr. Lem Banks, of Memphis, Tenn., whose numerous and extensive properties on the Mississippi and on the St. Francis rivers have all been placed in the most generous way at the disposal of the Academy for investigation throughout the last two seasons.

There are various mounds on the Kent Place, all more or less altered from their original shape through cultivation and through wash of rain. This place was well known when the dead river on which it now is was the course of the Mississippi, and doubtless in the subsequent decades great quantities of burials and accompanying artifacts have been plowed up and destroyed.

About one mile in a northerly direction from the landing on the Kent Place is a mound about 18 feet in height, if measured from the general level. North and south its diameter of base is 180 feet, and 120 feet east and west. The summit-plateau slopes upward from the northern extremity. From the southern end of the mound a ridge runs southward and then turning eastward continues to a deep depression containing water at the time of our visit, which depression doubtless marks the spot whence material for the building of the mound was taken. The length of this extension is about 300 feet; its breadth is about 80 feet, though it varies considerably. The ridge slopes sharply after leaving the mound, so that its height the greater part of the way is inconsiderable.

From the northern extremity of the mound a similar ridge, 340 feet in length, extends in a northerly direction and then turning, continues to the eastward.

Near the landing are two mounds, one of considerable size but greatly spread and cut by roadways, worn by trampling of feet and washed by water, on which are several frame buildings. In the smaller mound many burials are said to have been made in recent times.

Some dwelling-site debris lay in places over the cultivated part of the plantation. A flint chisel, however, was the only object of interest gathered by us from the surface.

As the clay at this place was too tenacious to permit much sounding with rods, trial-holes were almost our sole means of finding burials, and these were put down in great numbers throughout five and one-half days' digging by six men.

The sites more or less successfully dug at the Kent Place were: the ridges at both ends of the mound, already referred to; several rises of the ground in a field to the north of the mound; other elevations in cultivated ground in a southeasterly direction from the mound. One burial (No. 22), which will be particularly described later, came from the summit-plateau of the mound itself (in which, however, owing to recent burials, our digging was very restricted), and one from pasture land near the old river bed.

Our investigation resulted in the discovery of fifty-four burials, as follows:

Adults, 35
Adolescents, 2
Infants and children, 14
Bunched burials of adults, none exceeding the remains of two, 3
The thirty-seven adults and adolescents were in the following positions:
Extended on the back, 11
Partly flexed on the right side, 11
Partly flexed on the left side, 8
Closely flexed on the right side, 1
Disturbances, aboriginal and recent, 5

Burial No. 30 lay extended on the back to the knees, but the legs had been flexed against the thighs, bringing the feet to the pelvis.

Apart from burials there were found in the soil: one small, chipped, cutting implement of flint; one flint chisel; one arrowhead of the same material; part of an undecorated pipe of earthenware, of ordinary type; another large fragment of an earthenware pipe from which the bowl is partly missing, which has had at one time an extension in which has been an orifice of considerable size. In front of the bowl of the pipe are two projections like feet which enable the pipe to stand upright when placed on a level surface. Such supports (found even on some modern pipes) were present on pipes found by us in various sites along the St. Francis river, Arkansas. It is interesting to note, also, that pipes of this class were used by the aborigines in Argentina,[1] and in Mexico.[2]

But little of importance in addition to earthenware had been placed by the aborigines with their dead at the Kent Place. We shall describe in detail all burials with which artifacts other than earthenware were found, including the earthenware discovered with these particular burials.

Burial No. 4, a child about six years of age, had near the head, a bottle. Near this burial, and probably belonging to it, lay a small pebble, part of which had been chipped away to give it the form of a ceremonial axe. No perforation, however, is present.

Burial No. 5, a child about seven years of age, had at the neck and on the chest, eleven shell beads and an ornament, made from the bone of some fish, having a hole artificially made, and apparently trimmed a little on the edges. At the left knee was a bottle.

Burial No. 6, adult at full length on the back, had at the right elbow a bowl. By the legs lay a skull 21 inches long, belonging to a fish of the gar family.

Burial No. 7, adult partly flexed on the left side, lay with a bottle at the left of the skull, and a bowl under the left shoulder. At the neck were four shell beads.

Burial No. 8, adult, lay partly flexed on the right side, thus bringing the knees

[1] Professors F. F. Outes and C. Bruch. "Los Aborígines de la República Argentina," p. 54.
[2] Eduard Seler. "Die alten Bewohner der Landschaft Michuacan," p. 101 *et seq.* Gesammelte Abhandlungen zur Amerikanischen Sprach- und Alterthumskunde. Dritter Band.

toward the head. In the space between the knees and head were a bottle and a bowl. Thrown out by the digger at work on this burial, and doubtless belonging to it, was a tubular bead of copper or of brass, very badly corroded.

Burial No. 9, adult, closely flexed on the right side, had near the feet a bottle, below which were two bowls.[1] Near these bowls were fourteen slender arrowpoints of flint, eight lying together, the rest slightly scattered. Crushed against the pelvis were a number of pendants of shell, most of them broken beyond restoration, though a few have been successfully repaired. These pendants had been made by cutting out slender sections of mussel-shells, and include at one end part of the hinge of the shell, beneath which is a perforation. One side of each ornament is scalloped. A small quantity of powdered hematite lay near the left forearm of this burial.

Burial No. 10, adolescent lying flexed on the right side, had the space between the knees and the head occupied by the following objects: a bottle and a bowl; an interesting pipe (Figs. 26, 27) representing a human figure with perforations in the

FIG. 26.—Pipe of earthenware. Kent Place, Ark. (Full size.)

FIG. 27.—Pipe of earthenware, side view. Kent Place, Ark. (Full size.)

ears. On the back of the figure is represented the back-bone as it is so often shown in human effigy vessels. Near the pipe were three pebbles, about 3 inches in diameter, each rudely rounded to form a discoidal stone, and the carapace of a tortoise.

Burial No. 12, adult, partly flexed on the left side, had on the left side of the skull, an ornament of sheet-copper, 3.25 inches wide by 5 inches long, having two holes near together at the center, for attachment. On the outer side of the orna-

[1] At the Kent Place, vessels, though often found near the heads of burials, also frequently were come upon at other parts of the skeleton.

ment, preserved by the copper salts, were the remains of matting with which the burial probably had been covered. On the inner side were fibrous remains badly decayed. At the left of the skull was a bowl, and at the left shoulder a vessel of the well-known "teapot" class. At the outer side of the left elbow was a ceremonial axe of quartzite, of what is known as the hoe-shaped variety, 5.25 inches in length, without the perforation which these axes usually have.

Burial No. 15, adult, partly flexed on the right side, had a flint knife 4.1 inches in length, with a double serrated edge, at the right fore-arm. At the left elbow was a bowl resting in another bowl, near which was a lump of kaolin,[1] probably used for pigment. At the left shoulder was a bottle resting on a bit of sandstone. Near the skull of this burial were two discoidal stones, one of fossiliferous limestone, the other roughly rounded from a pebble. A few decaying shell beads lay at the neck.

Burial No. 22, adult, was the one to which reference has been made as having been found in the summit-plateau of the mound. This skeleton, which was partly flexed on the right side, lay 4 feet down, a depth greater than that of any other burial found by us at the Kent Place. At the left of the skull was a rude ornament of sheet-copper, 7.75 inches in length and 3.5 inches in maximum width, and having three perforations at one end for suspension or attachment. Small bits of copper had been pieced on with rivets to complete the ornament. At the neck were shell beads and glass beads mingled. At the left of the pelvis was a bowl, and a few badly decayed shell beads lay at the left knee.

Burial No. 32, adult, at full length on the back, had at the left hand four badly decayed mussel-shells, each with a small perforation centrally placed in the shell and not just below the hinge as perforations of this kind usually are found in such shells.

Sixty-nine vessels of earthenware lay with the burials at the Kent Place. These vessels, many of which were very badly crushed, never exceeded five with a single burial, and, as we have said, often had been placed at parts of the body other than the head.

The majority of vessels from this place were of inferior ware and of most common forms, though the use of color for decoration on the pottery had been popular among the aboriginal dwellers at the place, since no fewer than fourteen vessels bore decoration conferred by use of red pigment, while four had designs of red and white paint, and two others red and white pigment with black coloring material in addition. Many of the red vessels, however, were disintegrated beyond redemption, while of the coloring material that had been on them but a small portion remained.

At this place, presumably, the more wealthy or influential individuals dwelt together, inasmuch as every vessel or other artifact of any interest found at the

[1] Of this material Doctor Keller writes: "That marked 'Kent Place, Lee County, Ark.,' is a pure kaolin. It is very soft and friable and the powder consists of microscopic crystalline scales. It is only slightly discolored upon ignition, and a rough quantitative analysis gave silica 47.3% ; alumina 38.7% ; water 13.9% ; and a trace of lime. This is very nearly the composition of pure kaolinite."

Kent Place came from the two extremities of the mound we have described and from a small hump a few feet from it, while vessels and artifacts from various sites in the fields were of a very inferior class.

It is interesting to note in connection with this place that so far as our investigations extend it furnishes the northernmost occurrence, on the Mississippi river, of the well-known "teapot," or spout vessel, though we have found vessels of this class still farther north on the St. Francis river, Ark. Four "teapot" vessels, all broken and some very fragmentary, came from the Kent Place, one of black ware, two coated with red pigment, and one, parts of which unfortunately had been carried away by a plow, having a handsome decoration in red, white, and black.

There was almost a complete absence of incised decoration on the earthenware of this place. A few vessels were rudely marked with parallel, vertical lines; one had parallel lines encircling a space below the margin; one, a bottle, had a most inferior attempt to render a scroll design with the aid of a sharp point.

We shall now turn to vessels from the Kent Place inviting particular description.

Vessel No. 9. The bottle shown in Plate XXXII has a barrel-shaped body decorated with encircling bands of red and of white pigment, separated by narrow spaces showing the yellow of the ware. The neck is covered with a uniform coating of red. The coloring material on this bottle is particularly well preserved and bears a considerable polish.

Vessel No. 17. This vessel, of the well-known "teapot" variety, has a uniform coating of red pigment, and differs from most, but not all of the "teapot" class in that it has a flat base of circular outline, the bases of the majority of "teapot" vessels being rounded. Another minor variation in this vessel is that the knob opposite the spout instead of being rounded, as is usual in vessels of this kind, shows a slight flattening. Height 7.2 inches.

Vessel No. 4. This bottle, shown in Plate XXXIII, has for decoration on the body six figures, elliptical in outline, alternately red and white. Spaces between these figures now show the yellow of the ware to a considerable extent, but have been colored black, not with pigment, but with material leaving hardly more than a stain, perhaps charcoal, which was used by the Blackfoot Indians in recent times for coloring pottery.

Vessel No. 26. This bottle, 7.3 inches in height, is an example of the crude work in color so often met with in the Middle Mississippi region. The body, which is oblate-spheroidal, is covered with a design consisting of a cherry-colored cross whose four arms extend downward, and a cross of a somewhat degraded white, having arms directed upward. The neck of the bottle is coated with three bands, red, white, and red.

Vessel No. 1. This handsome bottle closely resembles one figured by Holmes.[1] The neck has been coated with red pigment. The body has eight vertical spaces alternately red and white, separated by narrow margins showing the yellow-brown color of the ware (Plate XXXIV).

[1] William H. Holmes. "Aboriginal Pottery of Eastern United States," Pl. XLa.

KENT PLACE, ARKANSAS, VESSEL NO. 9. (HEIGHT, 10.2 INCHES.)

COCKAYNE, BOSTON.

KENT PLACE, ARKANSAS, VESSEL NO. 4. (HEIGHT, 11.1 INCHES.)

COCKAYNE, BOSTON.

KENT PLACE, ARKANSAS, VESSEL NO. 1. (HEIGHT, 10.2 INCHES.)

COCKAYNE, BOSTON.

Johnson Place, Tunica County, Miss.

About two miles east by north from Mhoon Landing is a mound in a cultivated field which forms part of the plantation of Mr. W. M. Johnson, who resides upon it. This mound, about 13 feet high and 120 and 150 feet in diameter of base, has been spread by the long-continued cultivation to which it has been subjected, doubtless with considerable impairment of height.

A number of trial-holes sunk into this mound soon came upon raw clay where there was no likelihood of encountering a burial.

Surrounding the mound is a considerable aboriginal dwelling-site, part of which, on a slope, has been subjected to much wash of rain, judging from the quantity of fragments of human bones on the surface.

Superficially on this site, on which lay considerable debris, were gathered by us: a flint drill; a barbed arrowhead of flint; a pebble on which a cutting edge had been ground, thus forming a diminutive chisel; numerous fragments of pottery colored red, and some showing stripes of white and red; a modeled earthenware head of some animal, colored red in places, and having protruding eyes coated with white pigment.

Apart from human remains, in the soil was a pipe of earthenware, having a flat base protruding slightly beyond the bowl.

Unfortunately at this place, which has long been under cultivation, most of the burials, in all probability, had been ploughed and washed away. Diligent work over all parts of the site came upon four burials: a bunched burial with the bones and skull of an adult; another burial of the same class, having bones and skulls of three adults; a burial, presumably a bunched one, consisting of adult bones which had been badly disturbed by cultivation; the bones of a young child.

With the child's burial was a small vase coated with red pigment, and many fragments of another vessel.

No artifacts lay with the other burials.

Commerce, Tunica County, Miss.

Commerce is a small town on a great plantation belonging to Mr. R. F. Abbey, who lives upon it. About three-quarters of a mile in a southerly direction from the landing is a mound on cultivated ground, which has been very symmetrical and is still imposing in appearance, though the corners are somewhat rounded. This mound has been extensively used for burials in recent times. Its height taken from the northern side, where were neither depressions nor ridges of any kind, is slightly more than 20 feet. Its sides face the cardinal points, approximately. Its diameter of base N. and S. is 193 feet; that of the summit-plateau in the same directions is 114 feet. East and west the basal diameter is 173 feet, 83 feet of which is included in the summit-plateau.

Near this mound is a limited area of artificially made high ground, on which lay some fragments of pottery, a few flint pebbles, and much baked clay, remains

of aboriginal fire-places, broadly scattered by the plow. One knife and one chisel, both of flint, came from the surface, but no entire arrowheads were met with.

Two and one-half working days were devoted by us to the dwelling-sites at this place. The twenty-nine burials found were rather widely scattered; some were near the surface and had been disturbed by the plow. We were informed by Mr. Abbey that the part of the plantation on which we were at work had been under cultivation since about 1836; consequently, it is likely that many burials have been ploughed away in the past. Fragments of human bones lay in all directions over the sites.

But little successful work could be done with the sounding rod at this place owing to the number of fire-places below the surface, whose hardened clay impeded the passage of the rod. Consequently, trial-holes were practically our only means of discovering burials.

The burials were as follows:

Adults at full length on the back, 8

Children, 2

Bunched burials, 18

Cremation, 1

The eighteen burials of bones out of anatomical order, in layers and in piles, often consisted of the bones of one individual and never included the remains of more than three.

The cremated bones, in rather small fragments, formed a mass about 20 inches long, 14 inches wide, with a maximum thickness of 2 inches.

Although there were picked up on the surface at the Commerce Plantation a number of fragments of pottery having rather rude incised and trailed decoration, and one bit of ware on which was part of an engraved design, as well as a considerable number of bits of ware colored red on one side or having on them parts of bands of red and of white, but twelve vessels were found by us at this place. These vessels consist of eleven bowls of moderate size and one flat bowl or platter. All are without decoration of any kind, with the exception of one vessel covered with rude punctate marks and of another vessel with a fillet-like decoration around the margin of the opening.

No mussel-shells were found with any of these vessels.

One child had two vessels; one of the extended burials had two; and two had one each. Five bunched burials each had one vessel, and a single vessel lay with the cremated remains. When vessels lay near bunched burials they were as a rule in the neighborhood of the skulls.

The sole burial having with it any object other than pottery was that of a child about four years of age, which lay at a depth greater than did any other burial found by us at this site, namely 3 feet 8 inches. No pottery lay with this interment, but on the chest was a face-shaped gorget about 5 inches long, made from the body whorl of the conch (*Fulgur perversum*). This ornament has two holes for suspension at the top, or broader end. The decoration consists of a scallop-like carving

on the lower ends of both lateral margins, and traces of workmanship intended to represent a nose and mouth on one flat side.

At the left side of the pelvis of this burial, where the left hand rested, was a ceremonial axe of a silicious conglomerate, of the hoe-shaped class, 4 inches in length and 3 inches in maximum breadth of blade. The perforation usually found on axes of this kind is absent. The size of this little axe, much smaller than is usual with axes of this kind, marks it as a toy and quite in keeping with the age of the child to whom it belonged.

Rhodes Place, Crittenden County, Ark.

The Rhodes Place, formerly the Earle Place, is about one mile directly in from Ward Landing and is the property of Judge John F. Rhodes of Marion, Ark.

On this plantation is a flat-topped mound, washed out of all definite shape, on which stands a dwelling. The height of the mound, taken from the road which passes it, but which itself is on ground artificially heightened in aboriginal times, is 13 feet. On the opposite side, which is lower, the height of the mound is augmented. Two basal diameters of the irregular base are 200 feet and 160 feet.

In the neighborhood of this mound are many rises of the ground and low ridges on which are evidences of former habitation by the aborigines. It was in these places that our digging was done, the exact localities in some cases having been indicated by the results of sounding with a steel rod. We were told that much work had been done at this place by two persons with whose names we were familiar in connection with their wholesale search for pottery on the St. Francis river, Ark., and evidence of previous disturbance at the Rhodes Place occasionally was apparent.

The number of burials found by us was sixty-five, as follows:

Adults, 36

Adolescents, 2

Infants and children, 27

The thirty-eight adults and adolescents lay as follows:

At full length on the back, 35

Partly flexed on the right side, 1

Aboriginal disturbances, 2

The skeleton of one infant also had been disturbed in aboriginal times.

Included among the extended burials are two, the feet of one of which had been plowed away, while the skull of the other had been dug down to and removed by a seeker after pottery.

The reader will note the absence of the bunched burial at this place. The bunched burial was not encountered by us on the Mississippi river north of the site at Commerce.

The burials lay at varying depths in the made ground which had grown up under aboriginal occupancy, the deepest grave in this ground (which itself varied in depth) having been 40 inches. One burial, however, had been dug through the

artificial soil to extend a foot into yellow sand which underlies the made ground at the Rhodes Place. The bottom of this grave was about 4 feet from the surface.

An interesting burial (Number 9) was the skeleton of a female extended at full length, and having on the left arm the skeleton of a very young infant, its head resting on the upper arm of the adult skeleton. This skeleton had at the right elbow a bowl, and over the left shoulder a bottle.

On the surface, and in the soil, but apart from burials, were found at this place: a number of flint chisels; a celt of slate; a few small arrowheads of flint; several arrowheads made from antler; a number of rude disks wrought from fragments of pottery vessels, two centrally perforated; a canine tooth of a dog (*Canis familiaris*); one bone bead; one pottery support for use in holding a vessel above a fire, of the class described by us in a former report,[1] this particular support, however, not only being concave at the upper end, as such supports usually are, but having a decided outward bend of the body to furnish a more secure support when resting against a curved surface, than a straight body could afford.

Also apart from burials, and evidently lost during the occupancy of the site, was an undecorated pipe of earthenware, of ordinary type, and a similar pipe was found under the following conditions. Here and there throughout this site were large fire-places marked by areas of burnt clay, where it was evident the firing of pottery had been carried on. Immediately under the baked clay of one of these fire-places and partly included in a layer of carbonized material, lay the pipe in question. This pipe, fired black on the side which had been exposed to the flames, but light yellow in color on the upper part, presumably had been overlooked after incomplete firing.

At the Rhodes Place we came upon the southernmost occurrence in our experience of a curious aboriginal custom unknown to us before, namely, the interment with burials (and occasionally apart from burials, though the separation may have occurred after the time of interment) of single wing-bones (metacarpals), or a number of these same bones together, which had belonged to various birds, kindly identified[2] by Prof. F. A. Lucas as follows: swan (*Olor americanus*); Canada goose (*Branta canadensis*); greater snow goose (*Chen hyperboreus nivalis*); lesser snow goose (*Chen hyperboreus*); wild turkey (*Meleagris gallopavo*); a large duck.

At the great aborignal sites at the Bradley Place and at Pecan Point this custom was repeatedly noted, as will be set forth in the accounts of these sites, which follow in this report.

These wing-bones, when with burials, often lay near the forearms of skeletons, though sometimes the bones were found near other parts of the burials.

We shall now describe each burial with which were artifacts other than pottery, and shall give details of such pottery as was found with these burials.

[1] "Antiquities of the St. Francis, White, and Black Rivers, Arkansas," p. 280 *et seq.* Journ. Acad. Nat. Sci., Phila., Vol. XIV.

[2] Some of the wing-bones found by us were so badly decayed and broken that they were not retained for identification.

Burial No. 7, the skeleton of a child four or five years of age, had at the neck three shell beads and two columellæ of marine shells. Grouped around the skull and extending along the right side to the elbow, were eight vessels, nearly all diminutive. Lying beside the vessel farthest down was an undecorated pipe similar to the two others from this site. The placing of pipes with children or infants was not commonly resorted to in aboriginal times, but it has been previously noted by us. With this burial was also an ear-plug of earthenware (Fig. 28).

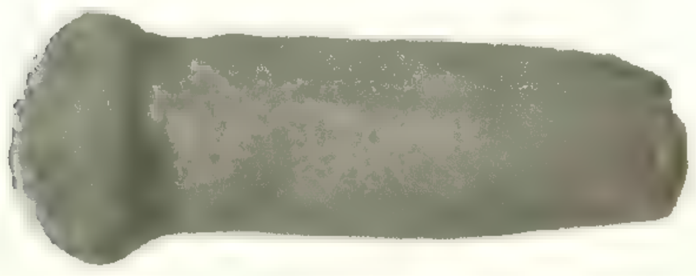

Fig. 28.—Ear plug of earthenware. Rhodes Place, Ark. (Full size.)

Burial No. 11, of a child about five years of age, had a few shell beads at the top of the skull where, perhaps, they had fallen from the neck at the time of interment. On the chest was an undecorated, face-shaped gorget of shell, 2 inches long and 1.75 inch in maximum breadth, having two perforations at the broader end and one at the opposite extremity. This burial had pottery vessels as follows: a bottle and a bowl above the skull; a pot at the right shoulder; a bowl near the right humerus.

Burial No. 21, adult, at full length on back, had two shell ear-plugs of the well-known class having the shaft cut from the parietal wall of the shell and the head from parts extending to each side of the suture. These lay one at each side of the skull. With this burial, also, were three vessels of earthenware, on one of which was a badly decayed mussel-shell, having on the outer side rude, incised decoration.

Burial No. 28, a child about four years of age, had ear-plugs of shell of the kind just referred to, the exact relation of which could not be determined as the skull had been disturbed by a blow from the shovel of the man engaged in digging. Seven vessels, all diminutive, were with this burial: a little beyond the skull, a bottle and a bowl; at the left of the skull, a pot and a vessel made in imitation of a foot of a child, with toes and ankle bones distinctly marked (Fig. 35); at the right ankle, two bottles and a ladle or spoon.

Burial No. 33, adolescent, extended on the back, had a pot at the left shoulder, and near the head, a shell ear-plug of the short, blunt pin variety, the companion to which no doubt escaped our search.

Burial No. 41, a child, had at the left of the thigh a much decayed mussel-shell and a wing-bone of a swan (*Olor americanus*).

Burial No. 42, a child seven or eight years of age, had at the neck two shell beads and one tubular bead of blue glass. On the left side of the thorax was a small, face-shaped gorget of shell, without decoration, having two perforations at the upper, or broader, end. On the right side of the thorax was a rude, discoidal stone of ferruginous clay with a secondary ferruginous coating. The six vessels which lay with this burial, most of which were small, had the following arrangement: a pot at the right of the skull; a bowl over the right shoulder; a pot at the right elbow; a bottle at the left elbow; a large bowl at the left side of the pelvis; a bottle at the middle of the left femur. A shell bead lay near one of these vessels.

Burial No. 45, the skeleton of a child about two years of age, had at the neck a small, thin ornament of shell, broken into many fragments; a bottle lying across a bowl, both diminutive, at the left of the skull; a small bowl at the left shoulder, on which was an animal head containing objects which rattled when shaken.

Burial No. 53, a child, had a bowl at the right of the pelvis and a discoidal of sandstone at the left elbow.

Burial No. 54, a child, had one shell bead at the neck, and a small, flat ornament of shell with two perforations, on the chest. Two vessels lay at the right shoulder.

Burial No. 57, adult, extended on the back, had a bowl and a pot at the right of the skull; a bottle at the left of the skull; a pot at the left shoulder. Near the skull also was a wing-bone of a lesser snow goose (*Chen hyperboreus*)?

One hundred and twenty-three pottery vessels, many crushed into small fragments, came from the Rhodes Place, all but six interred with burials. Three of these six vessels, however, lay together, and unquestionably had accompanied an interment. In aboriginal sites one often comes upon skeletons from which vessels have been taken, but the converse is unusual, and we are constrained to believe that the bones of a very small infant had disappeared through decay (though large bones at this place were fairly well preserved), or that our digger threw the small skeleton back and buried it under the loose soil before the vessels were discovered.

It may be well to explain in connection with vessels found with burials, that the total number met with at any one site must be less than originally had been placed there, since aboriginal disturbance invariably has broken or removed some vessels which latter are not found in connection with the bones, while in recent times the plow, and the "pot-hunter" in certain cases, have removed some vessels, leaving skeletons or parts of skeletons behind.

At the Rhodes Place the greatest number of vessels found with one burial was nine, and children had been by far the most favored.

Many of the vessels are shell-tempered. None has decoration in color.

The more interesting vessels from this place will now be particularly described.

Vessel No. 19, a bowl about 8.5 inches in diameter, has notches around the margin, and below, on opposite sides, the modeled head and tail of a frog in relief. In place of modeled legs on each of two opposite sides, however, is a disk in relief, somewhat more than one inch in diameter.

Vessel No. 65. This human effigy bottle (Fig. 29) differs from others found in this region in that the necks of the latter form parts of the modeled heads and are subservient to them. In this particular case a neck similar to that found on the bottles of the region has the head in relief upon it.

A better example of this type of bottle forms part of the collection of Mr. E. E. Baird of Poplar Bluff, Mo., for not only is the modeling of the vessel superior to that of our specimen, but the neck of the bottle is embellished with a pair of well-made ears.

Vessel No. 21. This human effigy bottle (Fig. 30) is by far the most interesting one of its class found by us in the season's work. The head is well modeled and presents a life-like appearance. Great attention has been given to details on the body, for not only is the back-bone plainly represented, but we see also in relief shoulder-blades, collar-bones, and knobs projecting at the wrists, indicating the heads of the ulnæ. The costal cartilages and the sternum also appear in relief, and a number of ribs have been incised on each side.

But the most interesting feature of all is that the figure is represented as

FIG. 29.—Vessel No. 65. Rhodes Place, Ark. (Height 7.4 inches.)

Fig. 30.—Vessel No. 21. Rhodes Place, Ark. (Height 8.4 inches.)

sitting cross-legged, a position very rarely seen in aboriginal figures found in the United States, the legs on effigy bottles almost invariably being represented flexed back parallel under the figure. On a shell gorget from Tennessee,[1] however, a cross-legged figure is shown.

Vessel No. 32. A bowl (Fig. 31) having a modeled human head on which is a head-dress presumably made from a stuffed bird or from a bird-skin. In this connection we are indebted to Mr. Charles C. Willoughby for the reference, Plate II of Thomas Hariot's "Virginia," Holbein edition, where is shown an Indian with a

FIG. 31.—Vessel No. 32. Rhodes Place, Ark. (About full size.)

bird with extended wings at one side of the head. The reader probably will recall also that in Le Moyne's "Narrative," Plate XIV, is portrayed a chief wearing part of a bird on the head.

Vessel No. 18. This interesting life-form represents a bird with a crest extending backward from the head and joining the body of the vessel. Both wings also are shown, and the tail, below which is modeled the vent in relief (Fig. 32).

Vessel No. 28 is a bowl (Fig. 33) belonging to the well-known class having a grotesque head of some fanciful animal on one side, and a curling tail on the opposite side. This particular vessel, which is superior to many of its class, has on the back of the head a swastika incised within a circle.

[1] Thomas Wilson. "The Swastika," Plate X, Rep. U. S. Nat. Mus., 1894.

FIG. 32.—Vessel No. 18. Rhodes Place, Ark. (About full size.)

Vessel No. 78. A little bowl of a class common to the region, with a modeled, upright head of a bird on one side and a conventional tail on the other. The only feature of special interest about this vessel is that a perforation has been made in the back of the head to aid suspension in connection with two perforations present in the tail. Diameter 5.1 inches.

Vessel No. 90. A small bowl with head, tail, and legs of a frog, modeled in relief. Small objects within the head rattle when shaken. Height 2.9 inches.

Vessel No. 26. A bowl 7 inches in diameter, having a modeled, upright head of some animal impossible to identify, and resembling numerous other vessels from this region. On the back of the head, incised, is a triskelion within a circle.

Vessel No. 82. This bottle (Fig. 34) is decorated as to the neck with notched, encircling bands, one at the base, one somewhat below the opening. On one side is a rude attempt to portray a human face. On the remainder of the neck are three upright, notched fillets.

Vessel No. 56. This bottle, of most unusual form (Fig. 35), representing a human foot, was found, as we have already explained, with the skeleton of a child about four years of age. The neck of the bottle, struck by a spade at the time of

FIG. 33.—Vessel No. 28. Rhodes Place, Ark. (Height 7.75 inches.)

Fig. 34.—Vessel No. 82. Rhodes Place, Ark. (Height 5.1 inches.)

Fig. 35.—Vessel No. 56. Rhodes Place, Ark. (About full size.)

FIG. 36.—Vessel No. 45. Rhodes Place, Ark. (Height 8.4 inches.)

FIG. 37.—Vessel No. 51. Rhodes Place, Ark. (Height 5.3 inches.)

its discovery, has been restored from parts which clearly indicate the height and shape of the neck. General Thruston[1] cites Doctor Jones[2] who describes and figures a bottle from a Tennessee grave, representing the foot and leg of a child. The foot, however, is at the top of the bottle, with the opening at the heel.

FIG. 38.—Vessel No. 3. Rhodes Place, Ark. (Diam. 8.7 inches.)

General Thruston[3] also figures and describes a stone pipe found near Nashville, Tenn., which represents a human foot.

Vessel No. 45. A pot (Fig. 36), evidently a cooking-vessel, is of rather inferior, shell-tempered ware, and bears a decoration, incised and punctate, of about the average excellence met with in that class of work in the Middle Mississippi region. Around the neck is a series of loop-handles.

[1] Gates P. Thruston. "Antiquities of Tennessee," Second ed., p. 137.
[2] Joseph Jones, M.D. "Exploration of the Aboriginal Remains of Tennessee," Fig. 28.
[3] *Op. cit.*, p. 190.

Vessel No. 51. This pot (Fig. 37), another cooking-vessel, much resembles the one just described. The loop-handles, however, are replaced by a more conventionalized form, merely uprights in relief.

Vessel No. 3. This pot (Fig. 38), also presumably used for culinary purposes, although made of coarse, shell-tempered ware, and possessing a surface unfitted for such work, has a handsome, incised decoration far excelling most of the embellishment of this class found in the Middle Mississippi region. The design, based on the swastika, appears four times. In spaces between the upper parts are upright lines in relief, surmounted by what are probably intended to represent human heads.

FIG. 39.—Vessel No. 73. Rhodes Place, Ark. (Height of bowl 2.8 inches.)

Vessel No. 73. A bowl having a modeled human head upright on one side and a conventional tail extending horizontally on the opposite side. On the tail appear two incised ovals, probably a symbol (Fig. 39).

Vessel No. 47. This vase, in reality more gracefully shaped than Fig. 40 would lead one to believe, bears on the body an incised decoration based on the swastika and perhaps in part derived from the crested serpent.

Vessel No. 81, a bowl, is decorated interiorly with a poorly executed, incised design, the meaning of which is problematical, though possibly a bird may be represented, as what may be intended for head, tail, body, and wings appear on the design shown in diagram in Fig. 41.

FIG. 40.—Vessel No. 47. Rhodes Place, Ark. (Height 4.5 inches.)

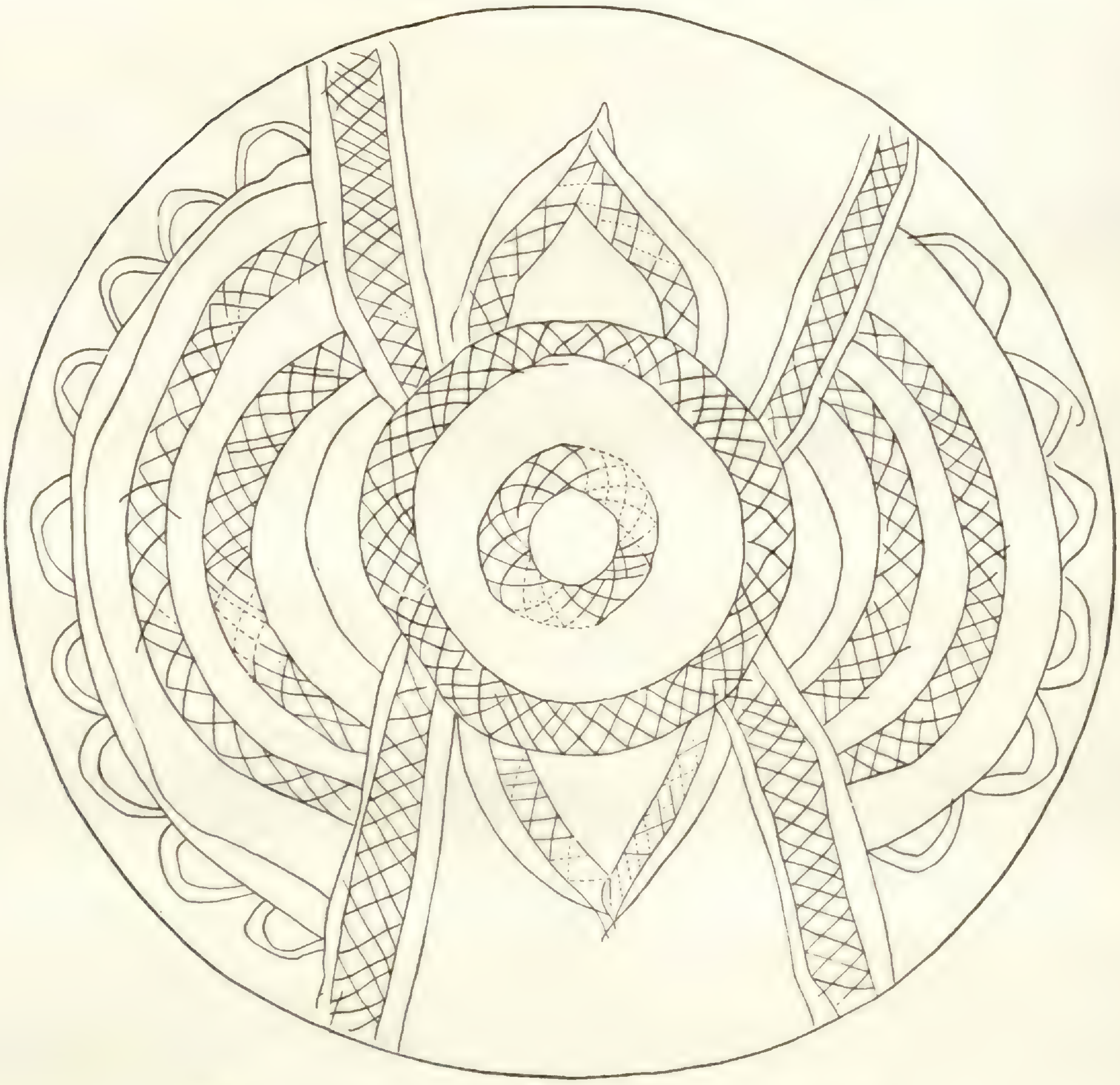

FIG. 41.—Vessel No. 81. Rhodes Place, Ark. Decoration. (Half-size.)

The Mound Place, Crittenden County, Ark.

The Mound Place, believed to be about three miles in a direct line from Wyanoka Landing on the Mississippi river, is the property of Mr. D. H. Fox, of Memphis, Tenn. The plantation takes its name from a number of mounds here and there on the place, variously from 5 to 15 feet in height, all much altered in shape by cultivation.

One day, with eight men to dig, was devoted by us to this place, the work being done in some of the mounds and in all the most promising localities on the level ground.

Although fragments of human bone and some broken pottery lay on some of the mounds, nothing was found in them by us, the diggers soon passing through a stratum of made ground to raw soil beneath, in which burials could not reasonably be expected to be found. Presumably much of the ground made by occupancy, and all the included burials, had been ploughed away. We were informed that the original height of the mounds had been impaired to a considerable extent by cultivation.

In the level ground, though many trial-holes were dug, but five burials were encountered—two of adults, two of children, one of an adolescent. The maximum depth was 32 inches.

With these burials were eight earthenware vessels, four with a single burial. On two pots is rude incised decoration consisting of parallel lines; and on a bottle, also incised, are partly interlocked scrolls made up of bands filled in with reticulate lines. One small bowl, rather neatly made, and having the tail and head of a frog modeled on opposite sides (an opening representing the mouth), has an incised decoration based on the swastika and, in addition, three circles, in two of which are scratched four-armed crosses, and in the other, one with eight arms. A bowl has four lobes on the body, rather rudely made.

It was evident from the number of mounds on the Mound Place and from the quantity of debris on the level ground that the site at one time had been a large one. Presumably long cultivation had carried away all the more superficial burials, leaving only a few of the deepest ones.

The Bradley Place, Crittenden County, Ark.

The Bradley Place, on the left-hand side going up, of an "old river," a former course of the Mississippi, which passes back of Island No. 40, is said to be eight miles above the junction of the two rivers, this union being about ten miles above Memphis, though, of course, on the opposite side of the Mississippi.

The plantation, the property of Messrs. Banks and Danner (Mr. Lem Banks of Memphis, whose courtesy to the Academy we have referred to in connection with the Kent Place, and Mr. W. S. Danner, residing on the plantation), has long been famous for the discovery of aboriginal pottery in various parts of its great extent. It is said that the interesting collection of aboriginal pottery in the Cossitt Library at Memphis, came from this place, and doubtless much of it did, but as the collec-

tion was made long ago, and as exact data did not accompany the pottery, it would be difficult to determine the origin of any particular vessel in it.

On the Bradley Place, about one-half mile from the water, are four mounds near together, one in the form of a ridge. These mounds, the Wampanocka group, the highest of which is about 20 feet, were without history of discovery of any kind of aboriginal relics, we were told. Some have been used in recent times for burial purposes. Moreover, as these mounds would be a place of refuge in event of the breaking of the levee (in which one of them is incorporated), no digging into them was attempted. Presumably, like other large mounds of this region, these were built for domiciliary purposes.

The cultivated portion of the Bradley Place, at the present writing, consists of a comparatively small part lying between the mounds and the water, and a vast field around the mounds and extending for several miles inland.

On parts of the territory between the mounds and the river, and on the eastern end of the great field (near the mounds, and farther back in the more or less immediate vicinity of the remains of a mound not associated with the group), as well as comparatively near the western extremity of the great cultivated tract, are ancient dwelling-sites, all more or less following the course of Wampanocka bayou. On these sites lay many relics of aboriginal life and death—bits of pottery; arrowheads, flakes, pebbles, chisels, etc., of flint; and numerous fragments of human bones.

All these sites have been for years most industriously prodded by the rods of colored men resident on the place and by those of visiting "pot-hunters," one of whom is known to have remained at the plantation for a considerable length of time.

All these sites also were carefully gone over by us with the aid of rods and of trial-holes, but while many burials were encountered, the fact that a marked proportion of them had been dug down to and deprived of accompanying artifacts, considerably impaired the scientific value of our results.

Ten and one-half days, with eight men to dig, were devoted to this place. The investigation resulted in the discovery of one hundred and eighty-one burials, none more than 42 inches in depth, as follows :[1]

Adults, 134
Adolescents, 6
Infants and children, 40

The forms of burial of the one hundred and forty adults and adolescents, less eight disturbances, aboriginal or recent, were :

Extended on the back, 117
At full length, face down, 7
Extended on the right side, 1
Partly flexed on the left side, 3
To be particularly described, 4

[1] With the exception of one burial, particulars as to which are not in our field notes.

Of the burials at full length on the back thirteen had the legs crossed at the ankles, in seven instances the left over the right, and in six cases in the reverse position.

Burial No. 43, adult, lay with the trunk on the back and the lower extremities partly flexed upward.

Burial No. 81, adult, had the trunk on the back, the thighs almost vertical, the legs flexed back toward the thighs.

Burial No. 92, adolescent, lay at the bottom of a pit about 3 feet in length. The position of the skeleton was the result of its restriction to such limited quarters. The trunk lay semi-reclining against one end of the grave, the head thrown back, face up, the arms parallel to the trunk. The thighs rested on the base of the hole, the left leg flexed back along its thigh, the right leg extending almost vertically upward along the other end of the grave.

Burial No. 129, adult, lay prone, the head on the right side, the right arm under the trunk, the fore-arm flexed, bringing the hand to the head. The left arm lay along the trunk.

The soil at the Bradley Place, though fire-places were evident occasionally, did not show the long aboriginal occupancy that we have found indicated at some other sites.

In the soil, apart from burials, were: one ear-plug of pottery, of the blunt pin type; one earthenware pipe of ordinary pattern and undecorated; three disks wrought from fragments of pottery vessels, each with a central perforation; a number of unperforated pottery disks; several chisels made from flint pebbles; a number of arrowpoints fashioned from deer antler; part of an antler with an encircling groove made preparatory to separation; two astragali of Virginia deer, ground flat on two sides and somewhat worked on two other sides, similar to the interesting astragali to be described particularly, later in this report, in connection with our investigation of the site at Pecan Point. There were encountered in the digging also three small celts, one of sedimentary and two probably of igneous rock; one small celt of black flint; numerous arrowheads of flint, including two of fair size and barbed, the others being small, often leaf-shaped, but sometimes square at the base; a fragment of an undecorated ornament of sheet-copper.

In one or two instances, lying in the made ground at this place, were halves of lower jaws of deer, which probably had been used as scrapers for maize when green, as they sometimes were among the Iroquois.[1] We are told that this part of the jaw was held by the anterior, toothless portion and with the sharp back teeth the kernels were scraped from the cob. "The Seneca housewife when she uses the jaw scraper, with characteristic humor, says, 'I am letting the deer chew the corn first for me.'"

Some interments at the Bradley Place were without artifacts of any sort; others had pottery alone.

[1] Arthur C. Parker. "Iroquois Uses of Maize and other Food Plants," p. 53. New York State Museum. Museum Bulletin 144.

The following burials had artifacts other than pottery associated with them. All burials of adults, when not otherwise specified, lay extended on the backs.

Burial No. 2, adolescent, disturbed. This burial had with it two ear-plugs of the blunt pin type which, however, were not found in place near the head as the skeleton had been disturbed by recent digging prior to ours.

Burial No. 3, a child, had one shell bead at the neck; a bowl and a bottle near the head.

Burial No. 10, a child, with which were two bottles and a pot, near the skull; at the neck, two shell beads, and a small, flat ornament of shell, tending toward oval in outline and having two perforations at the broader end.

Burial No. 24, a child, had a large and a small bottle at the left of the thorax. Large bottles associated with children's burials are somewhat unusually found. Together, at the right elbow, were a bit of quartz crystal and fragments of a shell from the Gulf coast (*Cardium robustum*). With these was an ear-plug gracefully carved from a fairly hard, white stone and copper-coated on the outer surface. A part of that portion of the ear-plug which was intended to button back of the lobe of the ear, is missing through breakage evidently in ancient times, from the appear-

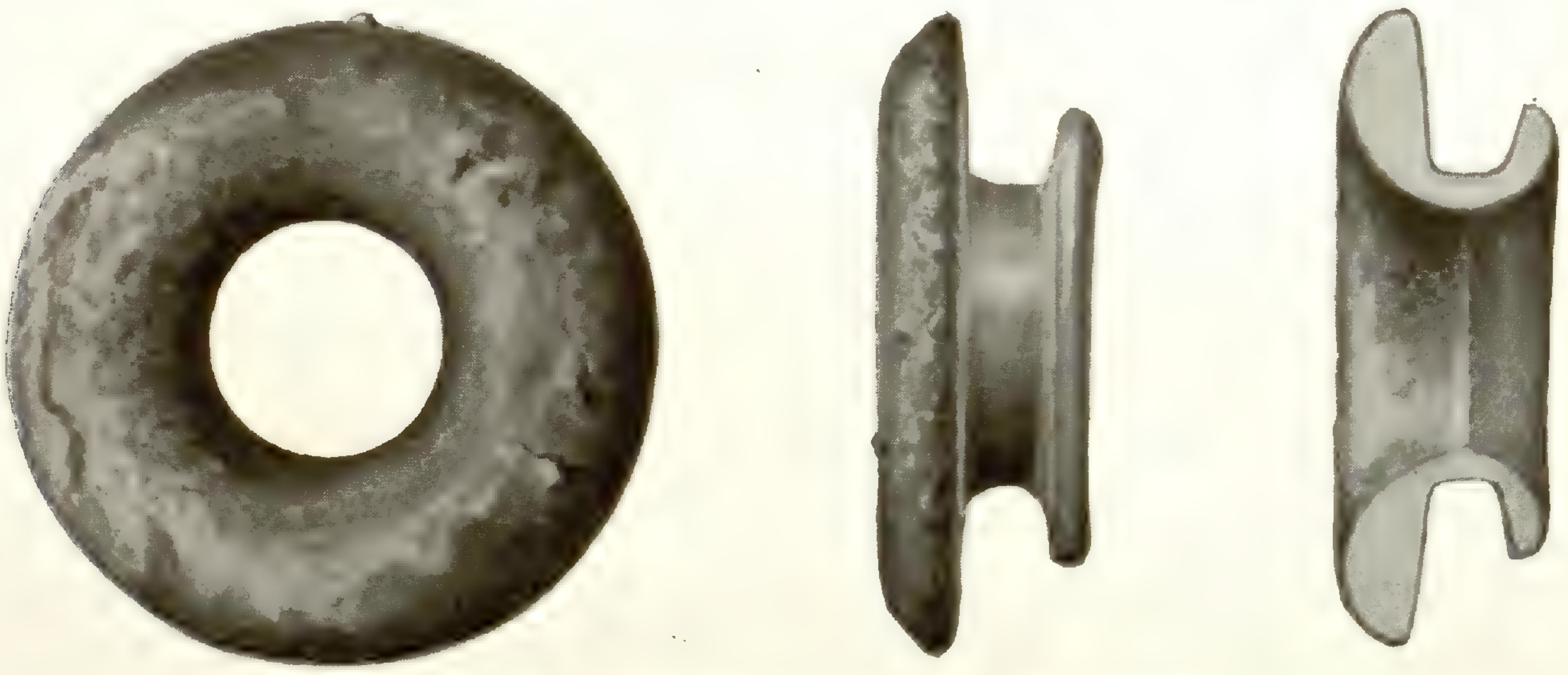

Fig. 42.—Ear-plug of stone coated with sheet-copper on the upper surface. With burial No. 24. Bradley Place, Ark. (Full size.)

ance of the surface of the broken part. The mate to this ear-plug was not present, and it is likely that the broken ornament had been given to the child with which it was found, for use as a plaything or as an ornament. This ear-plug is shown in three positions in Fig. 42. Ear-plugs of limestone, copper-coated similarly to this one, have been found by us in middle Florida, though the stone of these ornaments is not nearly so gracefully carved as is that of the ear-plug from the Bradley Place. An ear-plug closely resembling this one, from a stone grave in middle Tennessee, is figured by General Thruston.[1]

Burial No. 39, adult, had four wing-bones of swans (*Olor americanus*) together at the inner side of the right humerus.

Burial No. 54, adult, had at the right hand a wing-bone of a goose (*Branta canadensis*). A bowl and a bottle were near the skull.

[1] Gates P. Thruston. "Antiquities of Tennessee," Second ed., p. 169.

Burial No. 56, a child, had at each side of the head an ear-plug of the kind somewhat resembling a mushroom in shape.

Burial No. 57, adult. At the right of the skull were two entire tortoise shells, with an arrowhead of antler under one of them. A bowl and a bottle were near the skull.

Burial No. 62, a child. At the left of the skull was a bowl, and another bowl had been placed at the left humerus. In one of these was a rude discoidal stone. A bottle was at the right elbow, and at the left of the pelvis, the carapace of a small tortoise. At the left knee lay a bowl, and nearby an astragalus of a deer, characteristically ground for use in a game.

Burial No. 68, a child, had with it two bottles, one of which had been deposited after the loss of the neck. In the unbroken bottle were: one large bone bead and parts of another one; a very small and badly decayed shell ornament with a single perforation; twenty-five delicate tubes of bone, probably beads, averaging about one inch in length.

Burial No. 70, a child, had at the left of the skull a pot, a discoidal stone, a badly decayed astragalus ground to a certain extent as to some of the sides.

Burial No. 72, a child. Near the skull were: a bowl; a bottle; a flint chisel; a shell ear-plug at one side of the head, its mate probably having been thrown back by the digger. At the left shoulder lay a bowl; a bottle was at the left humerus; on the lower part of the trunk was a bottle without a neck. At the left of the pelvis a pot and a bowl had been placed, while over the pelvis was a bottle.

Burial No. 75, a child two or three years of age, had at the left of the skull a mass of red oxide of iron, ground for use as pigment. Dr. H. F. Keller speaks of this pigment as highly ferruginous. At the neck were: thirty-six shell beads one-third to one-half inch in length; one small, tubular bead of sheet-copper or of sheet-brass, corroded through and through; two beads of glass. With the beads were the spire of a marine shell, greatly decayed, having two perforations for suspension, and what seem to be two diminutive, copper bracelets, one placed above the other and joined together through corrosion when found. These bracelets, if such they are, are made of rods of copper with overlapping ends, but are bent to have an inside diameter of .75 inch, and hence, with such proportions, could hardly have encircled the wrists of even a young infant. Perhaps, placed together, they served as a pendent ornament, in connection with the beads. Attached to these by corrosion was a metal bead similar to the one already described. On the chest of the skeleton was an undecorated gorget of shell, irregularly oblong, 3 by 3.5 inches, having at the broader end four perforations, two in line immediately above two others also in line. To the right of the pelvis stood a bottle.

Burial No. 83, a child, had at the neck a bottle, and an astragalus of an elk, ground smooth on two of its sides and worked to some extent on two other sides.

Burial No. 116, a child about six years of age, had with it a bottle near the head and shell beads at the neck, with which was a small section cut from the body whorl of a marine univalve, having one perforation for suspension.

Burial No. 119, a child, lay with a vessel at each side of the skull and shell ear-plugs on opposite sides of the head. A badly decayed columella of a small marine univalve lay at the chin; a bottle was near the left side of the pelvis.

Burial No. 120, adult, had at the right of the skull, a bottle, and at the right shoulder a number of small pebbles together, presumably having belonged to a rattle, the rest of which had disappeared through decay.

Burial No. 124, adult, was interesting in that it had a bowl inverted over the skull, completely covering it. Under this bowl, to the left of the lower jaw of the skeleton, was an earthenware pipe having a flat base surrounded by an incised line. To the left of the covering bowl was another bowl upright. Over part of the thorax was a bowl; and another bowl lay at the left shoulder, near which was an undecorated earthenware pipe of ordinary pattern. Immediately alongside the covered skull of this skeleton was evidence of comparatively recent digging, and it is probable that other objects belonging to this burial had been removed previous to our coming.

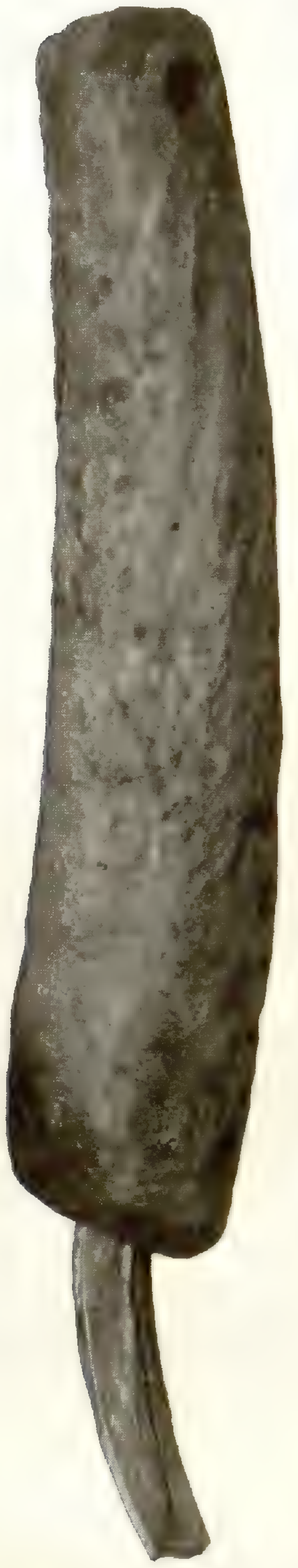

Fig. 43.—Tool made of an incisor of a beaver, in a handle of antler. With Burial No. 126. Bradley Place, Ark. (Full size.)

Burial No. 126, adult, had to the right of the skull, a bottle resting on a bowl. Over the opening of the bottle was a spoon with dentate margin at one end, made from a mussel-shell, which was greatly decayed when found. At the left of the skull, and extending beyond, were eighty-five chips, pebbles, and parts of pebbles, of flint. With these was a mass of red pigment. At the right shoulder were a flint pebble and an arrowhead of antler.

At the outer side of the right humerus, and parallel to it, lay a most interesting object, namely, a tool consisting of a handle of deer antler much worked down and showing impressions of cord which had encircled it its entire length at certain distances apart. Each end of this handle is hollowed out to a considerable extent, and at one end is a perforation, presumably for suspension. In place in the other end was the incisor of a beaver projecting from the socket 1.1 inch, the curve of the tooth being in reverse direction to a curve in the handle (Fig. 43). The tooth is considerably chipped at the distal end as if by use. Although held in place, when found, by a mixture of sand and clay which had gained entrance to the socket, the former method by which the tooth had been fixed was not apparent. Presumably gum had been used which, in course of time, disappeared through decay.

It is interesting to note that Professor Putnam[1] found in

[1] Frederic W. Putnam. Eighteenth and Nineteenth Annual Reports Peabody Museum of American Archæology and Ethnology, p. 456, Figs. 8 and 9.

an Ohio mound, together, two handles of antler, in one of which had been inserted a splinter of bone and in the other a chipped stone point. In this case, too, the method of fastening was not evident.

With this interesting tool found by us was a piercing implement of bone, and on the inner side of the same arm, in many fragments, were what presumably had been two long, slender, bone implements of some kind.

At the left leg lay a large fragment of a bowl which had been of considerable size, in which were forty-seven pebbles and chips of flint and one slab of conglomerate. Resting on these fragments of stone were seventeen tines of antler ranging in length between 1.7 inch and 3.25 inches, carefully worked down and blunt at each end. These probably represent a preliminary stage in the manufacture of handles for small tools. Professor Putnam also found together a number of handles of antler in connection with the tools we have referred to, though the handles found by him were in a more advanced state of completion than are ours.

Under the fragment of bowl containing the handles of antler, and extending beyond it, we found ninety-five pebbles and fragments of pebbles, some 2 or 3 inches in diameter, though most of them were much smaller. With these was a mass of red pigment.

FIG. 44.—Point of black flint. With Burial No. 140. Bradley Place, Ark. (Full size.)

Burial No. 135, adult, had a bottle at the right of the skull, a bowl on the upper part of the thorax, and three flat implements of bone with rounded ends, probably used in basketry,[1] lying parallel at the right of the humerus.

Burial No. 136, adult, lay with a pot at the left elbow, and a scale of a gar-pike (*Lepisosteus*), perhaps at one time in use as an arrowhead, at the right of the pelvis.

Burial No. 140, adult, had at the right elbow part of a tine of deer antler, smoothed exteriorly and rounded at each end; also an implement or weapon of unusual form, of black flint, 3.9 inches in length and 1.5 inch in maximum width (Fig. 44). At the right humerus were: three piercing implements of bone; part of a small stone celt; about two-thirds of the incisor of a beaver; and a tine of deer antler worked down and hollowed at one end, probably a tool in connection with the beaver tooth, which, however, was not found in place.

Burial No. 142, adult, had at the left elbow a bottle, and at the right of the pelvis, a mushroom-shaped object of pottery, used as a modeling tool in the manufacture of earthenware vessels.

Burial No. 144, adult, had a shell ear-plug at one side of the head, but careful search failed to find its mate on the opposite side. However, at a place where so

[1] Cf. Henry W. Haynes. Proc. Boston Soc. Nat. Hist., Feb. 15th, 1893, Vol. XXVI, p. 31.

much digging had been done down to skulls, for the removal of objects with them, this absence has no significance.

Burial No. 145, a child lying face down, had at the neck a roughly triangular gorget of shell, about 3 inches in length, undecorated, having two perforations for suspension at the broader end. A bowl and a bottle were at the right and at the left knee, respectively.

Burial No. 147, a child about seven years of age, had near the skull a pot, and a conch-shell (*Fulgur perversum*) having a round hole in the body whorl below the shoulder, for the insertion of a handle. Tools of this class are common enough in Florida, but the discovery of one so far north is of interest. With the shell implement was a mussel-shell (*Unio purpuratus*). At the right of the skull stood a bottle, while at the left of the head was a pot containing another pot inverted. At the neck were eighty-four shell beads of various shapes and sizes. At each side of the neck was a shell ear-plug of the short, blunt-pin type described by Dumont as "the shape of a nail provided with a head."[1] In this particular instance each ear-plug has back of the head a groove to accommodate the encircling lobe of the ear. A pot lay at the right forearm, and a bowl near the right femur, having with it two mussel-shells, one of which is perforated near the hinge.

Burial No. 152, adult, had a large, decaying mussel-shell over the left elbow, and two others, one notched at the end, at the left humerus.

Burial No. 153, a child, had a bowl and a bottle at the skull, and at the neck a small univalve much decayed.

Burial No. 155, adult, lay with a bowl and a bottle at the right of the skull. In the bowl were forty-eight pebbles and chips of flint, and five small, leaf-shaped arrowheads of the same material. On these were three sections of tines of deer antler, probably intended for tool handles. At the right shoulder was a bowl containing a bit of sandstone and having a nodule of flint nearby. Near the left hand were a bowl and a piercing implement of bone, with the remains of what probably had been a similar implement.

Burial No. 157, adult, had at the right shoulder a handsome chisel wrought from a flint pebble, and fragments of a bone implement. At the right of the skull was a pot.

Burial No. 160, adult, had a shell ear-plug near the skull. The opposite side of the cranium had been dug down to and rifled by a previous digger.

Burial No. 174, adult, lying face down, had a bowl at the left of the skull and a pot resting on the back. Near the pelvis was a piercing implement of bone.

While digging at the Bradley Place we came upon a fire-place which at one end was within about 8 inches of the surface, but sloped downward to a depth of 1.5 feet approximately. Below this fire-place was a pit about 2 feet in depth, in which, mingled with the soil and scattered here and there, were numerous fragments of china and of glass, and the metal part of a fork with two tines.

[1] Cited by John R. Swanton. "Indian Tribes of the Lower Mississippi Valley." Bulletin 43, Bur. Am. Ethn., p. 55.

We do not know if this fire-place had been used by Indians or not. At the Bradley Place was abundant evidence of aboriginal intercourse with the whites. This fire-place, however, was not accompanied with masses of baked clay as aboriginal fire-places often are.

Prof. F. A. Lucas kindly has identified bones belonging to the following lower animals, found by us while digging at the Bradley Place: Dog (*Canis familiaris*), Red fox (*Vulpes fulvus*), Florida otter (*Lutra canadensis vaga*), Black bear (*Ursus americanus*), Bison (*Bison bison*), Beaver (*Castor canadensis*), Swan (*Olor americanus*), Canada goose (*Branta canadensis*).

FIG. 45.—Vessel No. 28. Earthenware bottle having opening plugged with clay. Bradley Place, Ark. (Height 6.8 inches.)

Two hundred and fifty-eight vessels of earthenware, most of them undecorated, and great numbers crushed to fragments, were found by us at the Bradley Place, all but six with burials, and usually near the skulls, the greatest number with one burial being nine. In or near some of the vessels were mussel-shells (*Unio*) which had been used as spoons, some of the shells being smoothed at one side and a few notched at one end. Shells sometimes had been placed across the openings of bottles.

The earthenware found by us at the Bradley Place does not equal in point of interest that from some other sites in the Middle Mississippi region, and includes few of the rarer forms. The ware, sometimes with shell tempering and sometimes without it, is occasionally of fair quality. It is practically without incised decoration and the use of pigment is evident on it in but nine instances. Of these nine examples, four are vessels originally having had a uniform coating of red pigment; two have simple designs in red on yellow ware; two, decoration in red and cream color; and one, in red, cream, and black.

The following vessels are worthy especial description:

Vessel No. 28. This vessel, or rather the body of a bottle, (Fig. 45), lay at a fire-place. It was also about one foot from a burial, but this proximity presumably was adventitious.

FIG. 46.—Vessel No. 94. Bradley Place, Ark. (Height 8.3 inches.)

The bottle had been of yellow ware, and had possessed three feet which, hollow, had been joined to the body of the bottle after the body itself had been completed. A circular implement had been used to punch holes through the base of the bottle to enable the feet to share in the holding capacity of the body.

The most interesting feature of the bottle, however, is that having lost its neck, a mass of clay had been in part forced down through the opening where the neck had been and in part spread over surrounding portions of the body. The mass of clay was then fired to some extent, leaving the part within the bottle very imperfectly baked, while the exterior portion is more thoroughly fired.

FIG. 47.—Vessel No. 87. Bradley Place, Ark. (Height 5.9 inches.)

The entire mass of clay was withdrawn by us from the bottle only after considerable effort, and it was evident that the closing of the open space had been intended to be permanent, possibly with a view to the reversal of the original position of the vessel, the contents to be allowed to escape through the orifices where the feet had been. It is possible this was the work of children.

Vessel No. 94. This interesting bottle, shown in Fig. 46, presents a rather novel feature, namely, the representation of the human head, the circular opening of the bottle taking the place of the mouth.

Vessel No. 87. A human effigy bottle (Fig. 47) presenting no feature of especial interest and shown merely as a specimen of effigy vessels from this place. A line of small protuberances extending down the back are designed to represent

the presence of vertebræ beneath the flesh, a common feature in this class of vessels. The legs extend parallel backward under the body.

Vessel No. 156, another human effigy bottle, is somewhat more interesting than the preceding one on account of the peculiar arrangement of the hair or head-dress, which differs on the two sides (Fig. 48).

FIG. 48.—Vessel No. 156. Bradley Place, Ark. (Height 7.75 inches.)

Vessel No. 67. A bottle, 7.3 inches in height, with globular body, having as decoration three designs based on the swastika, shown in red on a ground of cream color. This design was much in vogue in parts of the Middle Mississippi Valley region. Almost exactly similar decoration is shown by Holmes,[1] and in various plates of our report on aboriginal sites of the St. Francis river, Ark.[2] The neck of

[1] William H. Holmes. "Aboriginal Pottery of Eastern United States," Pl. XLIa and b. Twentieth An. Rep. Bur. Am. Ethn.

[2] *Op. cit.*

this bottle, 2 inches in height and 3.3 inches in width, has had a decoration in red pigment, now almost obliterated.

Vessel No. 119. A bottle 5.8 inches in height, with a rather short, wide neck, having in relief on one side, the head and fore-legs of a frog, and on the opposite side, the hind-legs.

Vessel No. 127. Such parts of this bottle as were found by us consisted of sixty-eight fragments, which have been cemented together, with restoration of other parts which, however, were not essential in order to determine any feature belonging to the bottle (Fig. 49). This vessel is of considerable interest in that it is evidently shown as enclosed in a network of cord, which suggests the manner in which it is likely bottles sometimes were carried.

Fig. 49.—Vessel No. 127. Bradley Place, Ark. (Height 7.6 inches.)

Vessel No. 182. A bottle (Fig. 50) which has an engraved design based on the swastika, with an addition often found in decoration having a mythological significance among the aborigines of southern United States, and probably derived from the crested serpent. This bottle is of interest in that it comes from a region where engraved decoration is less frequently encountered than is the case farther to the southward.

FIG. 50.—Vessel No. 182. Bradley Place, Ark. (Height 8.6 inches.)

Vessel No. 134. A bottle having in relief on one side a modeled head of a frog and on the opposite side a tail (Fig. 51). The reader will recall that in aboriginal art in the United States, the frog usually is represented with a tail.

FIG. 51.—Vessel No. 134. Bradley Place, Ark. (Height 5.25 inches.)

Vessel No. 84. A pot, the body of which is surrounded by vertical depressions. From one side projects the modeled head of some animal. A tail which has been on the opposite side is missing. On two sides, opposed to each other, are two disks in relief (Fig. 52).

Vessel No. 38. This bowl (Fig. 53) belongs to a class specimens of which often are found in the Middle Mississippi region. It is interesting only in that the animal head is represented with expanded jaws, an unusual, though not a unique feature.

Vessel No. 187. This bottle (Fig. 54) is somewhat similar in shape to one figured by Holmes[1] as coming from Arkansas. The body is surrounded by vertical corrugations which, at one time, have been coated with red and white alternately. The neck, slightly flaring at the opening, has been covered with alternate, horizontal bands of white and of red. A beaded collar surrounds the union of the neck with the body, and a similar decoration adorns the margin of the base.

[1] *Op. cit.*, Pl. XVb.

FIG. 52.—Vessel No. 84. Bradley Place, Ark. (Height 4.8 inches.)

FIG. 53.—Vessel No. 38. Bradley Place, Ark. (Height of bowl 4.25 inches.)

FIG. 54.—Vessel No. 187. Bradley Place, Ark. (Height 7.9 inches.)

Vessel No. 131. This rather curious vessel (Fig. 55) has a conventional tail extending from one side, and from the opposite side a head so highly conventionalized that it consists merely of a knob adorned with encircling lines.

Vessel No. 90. In Fig. 56 is shown a bowl of light brown ware, having on one side a knob, and on the opposite side a projection about one inch in length, somewhat resembling a spout of the kind found on vessels of the "teapot" class, though this one is much shorter than are spouts on vessels of the type noted. This rudimentary spout, if such it be, is solid, though at the extremity a shallow depression has been made on it. On the opposite side from the spout is the knob usually found on "teapot" vessels when they are not animal forms, and which, by-the way, is often found on vessels representing gourds.

FIG. 55.—Vessel No. 131. Bradley Place, Ark. (Height 3.3 inches.)

FIG. 56.—Vessel No. 90. Bradley Place, Ark. (Diam. 7.5 inches.)

Vessel No. 158. In our description of the site at Pecan Point in this report we have occasion to refer to a symbol, the meaning of which is problematical, and which sometimes appears as the outline of bowls. We have here in Fig. 57 a bowl which, instead of being given the outline of this symbol, which usually has two points projecting vertically, has the points doubled in number and equidistantly placed about the rim.

Fig. 57.—Vessel No. 158. Bradley Place, Ark. (Diam. 10.2 inches.)

FIG. 58.—Vessel No. 69. Bradley Place, Ark. (Diam. 10 inches.)

FIG. 59.—Vessel No. 215. Bradley Place, Ark. (Height 3.7 inches.)

Vessel No. 69. The bowl shown in Fig. 58 is decorated interiorly with an engraved design of mediocre excellence, presenting a triskelion centrally placed and surrounded by groups of festooned lines.

Vessel No. 215. This pot of brown ware (Fig. 59) has an interesting decoration made up of small nodes thickly placed. A somewhat similar vessel is figured by Holmes[1] as coming from Arkansas.

[1] *Op. cit.*, Pl. XIg.

PECAN POINT, MISSISSIPPI COUNTY, ARK.

Pecan Point, on Mississippi river, forms the southeastern corner of Mississippi County, which is the northernmost county of the State of Arkansas, bordering Mississippi river.

Pecan Point has been celebrated for many years for the number of aboriginal antiquities found there during the building of levees and in cultivation. In addition, much successful work was done at this place for the Bureau of American Ethnology, and for the Davenport Academy of Natural Science, of Davenport, Iowa, the results of which are described in various reports[1] of the Bureau of American Ethnology. It was at this place that the first of the interesting class of head vessels was found.

The warm thanks of the Academy of Natural Sciences are tendered Mr. R. W. Friend, of Pecan Point, who cordially put his large plantations there at the disposal of the Academy for investigation, in the most unreserved way.

About one mile above the main settlement at Pecan Point, though still in its outskirts, a short distance from the river, is a mound which has been used as a cemetery in recent times. This mound, which has suffered some in shape in the lapse of years, is about 12 feet in height and is approximately square with rounded corners, its sides nearly facing the cardinal points. The basal diameter is about 110 feet; that of the summit-plateau, 50 feet, approximately. Apparently a causeway connected the mound with the level ground in former times.

A short distance from this mound (which probably was domiciliary and was not dug into by us) is the northwestern corner of a large field which has been long under cultivation, and part of which, judging from the quantity of aboriginal debris scattered over the surface, must have been a dwelling-site for a considerable period in early times. This field, we were told by Mr. Friend, was where the digging previous to our own had been carried on. Since then, however, that part of the field in which aboriginal burials are found has been curtailed by the building of new levees.

Although so much former investigation had been carried on at Pecan Point, we felt the place still offered an excellent opportunity to the archæologist, since it is plain that neither by digging trial-holes nor by the use of sounding-rods can an aboriginal site of any size be entirely cleared of relics, and those using only rods for the discovery of vessels (as did those who preceded us, we were told), of necessity leave behind the vessels that are deeply buried and all those over which are fire-places of hardened clay, through which rods cannot pass.

[1] William H. Holmes. "Illustrated Catalogue of a Portion of the Ethnologic and Archæologic Collections Made by the Bureau of Ethnology during the year 1881," p. 469 *et seq.* Third An. Rep. Bur. Ethn.

William H. Holmes. "Ancient Pottery of the Mississippi Valley," *passim.* Fourth An. Rep. Bur. Ethn.

Cyrus Thomas. "Mound Explorations," p. 219 *et seq.* Twelfth An. Rep. Bur. Ethn. This account contains a plan of the aboriginal mound and site at Pecan Point.

William H. Holmes. "Aboriginal Pottery of Eastern United States," p. 98 *et al.* Twentieth An. Rep. Bur. Am. Ethn.

Those relying on rods alone, even in the absence of fire-places miss much pottery, and many skeletons (which often indicate the presence of pottery) which, softened by long exposure to damp, offer little resistance to pointed rods of steel.

Nevertheless, the activities of former searchers are a distinct detriment to the archæologist seeking exact data, as no definite determination can be arrived at as to the average number of vessels placed with burials in any particular site, since, as we know, these seekers after pottery were accustomed, after ascertaining the position of vessels, to dig down to them and to effect their removal, leaving the skeletons behind.

Our digging at Pecan Point occupied fourteen and one-half days of eight hours each, with a force of nine men to handle the spades and four men to supervise. The work was done in the northwestern part of the field, to which reference has been made, and the area searched extended from the northwest corner of the field, a distance of 162 paces along the northern side, and had a breadth of 89 paces at the western end, where the fence meets that of the northern side at a moderately acute angle, and covered all that part of the field on which signs of aboriginal occupancy were apparent. In addition, a small garden and some territory adjoining it, all of which were contiguous to the area already specified, were dug through by us, with considerable success.

Search elsewhere in the field was not rewarded.

Our quest consisted of sinking trial-holes at random, since inequalities of surface, which might have guided us had they been present, were no longer apparent, and prolonged drought had hardened the soil to such an extent that the use of sounding-rods was not effective.

The soil in which burials were lay upon alluvial deposit and was composed of ground darkened by admixture of organic matter in which were ashes and dwelling-site debris. Fire-places at various depths were encountered at intervals.

The depth of this made-ground varied in places. The deepest burial found (which lay 4 feet 6 inches below the surface) was still in it. Often, however, the depth of this artificial soil did not exceed 3 feet.

Three hundred and forty-nine burials were encountered at the Pecan Point site, as follows:

Adults and adolescents, 257

Infants and children, 58

Disturbances[1] caused by interfering graves, in aboriginal times, and by recent cultivation and search, 34

The forms of burial of the adults and of the adolescents were as follows:

Extended on the back, adults, 227; adolescents, 21, 248

Extended face down, adults, 4; adolescent, 1, 5

Partly flexed on the right side, adolescent, 1

[1] In case of serious disturbances such as those noted here, no determination as to age was made. Slight disturbances, such as the loss to the skeleton of an arm or of a foot, were ignored in the classification.

Partly flexed on the left side, adults, 2; adolescent, 1, 3

There was no fixed orientation of the burials at this place, heads being directed toward various points of the compass.

Although considerable age must be accorded the burials at Pecan Point, since nothing in any way indicating contact with white persons was found there, yet possibly owing to the quantity of ashes in the made-ground in which the burials lay, which would act as a preservative, the skeletal remains were in an excellent state of preservation, enabling us to obtain there forty-eight skulls and other skeletal remains, which were included in our gift to the National Museum.

An interesting pathological specimen was met with: Burial No. 69, the skeleton of an adult, had a badly united fracture in the upper fourth of the left femur, with anterior displacement of the upper fragment.

On the surface, where they had been ploughed up, and in the soil of the dwelling-site, were many flint chisels which had been made from pebbles, often ones especially selected owing to a shape which lent itself to the making of a chisel with a minimum amount of chipping. Some chisels, however, were made from pebbles broken in two or from which considerable parts had been removed. After the pebbles had been chipped to the required shape, they were ground somewhat, especially on both sides at one end, to confer a cutting edge. In Fig. 60 is shown a selected pebble; one chipped and ready for grinding; and a completed chisel. In the Third Annual Report of the Bureau of Ethnology[1] is shown one of the chisels from Pecan Point.

Also scattered throughout the made-ground were numerous small, flint arrowpoints,whole or in various stages of completion; one large projectile-point or knife of flint, made with a single barb, a type well known as coming from parts of Arkansas, Louisiana and elsewhere; several celts of moderate size, one of these of fine-grained sandstone, another probably of metamorphic rock; a small, flat mass of bituminous coal; a few, rude, discoidal stones made from pebbles originally flat; many flat, circular pebbles not artificially shaped; numerous disks made from fragments of pottery vessels, some centrally perforated; a tube of bone with an encircling groove near one end; a shell of a cretaceous fossil (*Exogyra costata*) which occurs in western Arkansas; two scales of the gar-pike, such as Du Pratz says were used as arrowpoints by the Mississippi Indians; three mussel-shells found one within the other, two of which, probably belonging to the same shell-fish (*Unio anadontoides*), had been carefully worked to a point at one end; an astragalus of an elk and three belonging to Virginia deer, all showing workmanship to enable them to be used as dice in a game; in a little pile together, five wing-bones belonging to the wild swan, the wild goose, and the wild turkey. We have spoken before of the curious custom at the Rhodes Place, the Bradley Place and at Pecan Point, to put near or with the dead, metacarpal bones of birds of considerable size. The evidences of this custom were especially noticeable at Pecan Point, but here, however, each occurrence was not recorded by us as the bones sometimes were too badly crushed and decayed for identification.

[1] P. 470, Fig. 142.

FIG. 60.—The flint pebble to the left in the illustration is one of the kind often selected by the aborigines on account of a suitable shape from which to make chisels. The middle pebble, showing chipping, illustrates the intermediate stage in the work. On the right is shown the finished chisel having a ground cutting-edge. All from Pecan Point, Ark. (Full size.)

The head of a long-bone found in midden debris at this place has been identified by Prof. F. A. Lucas as having belonged to a bison.

FIG. 61.—Pipe of earthenware. With Burial No. 4. Pecan Point, Ark. (Height 2.25 inches.)

We shall now consider all burials at Pecan Point, which were accompanied with artifacts other than pottery vessels, but shall refer also to such vessels as were with these particular burials. The form of burial of adults and of adolescents, in each case, unless otherwise specified, was extended on the back.

Burial No. 2, adult, had a wing-bone of a turkey at the left ear, and a leaf-shaped projectile point of flint near the head. At the face was a bowl, and a bottle was at the right shoulder.

Burial No. 4, adult, had a bottle at the right side of the skull and a bowl at the right shoulder. Near the head was an earthenware pipe having on two sides a decoration based on the swastika, with spiral arms, and in front an incised representation possibly of the head of a deer with antlers, or of a human head surmounted with plumes (Fig. 61).

Burial No. 13, a child, had three shell beads at the neck, a discoidal stone at the left thigh. Near the stone was the wing-bone[1] of a bird. With this burial also was an astragalus of an elk, smoothed as to some of the sides, for use in a game.

Burial No. 25, a child, had at the right forearm a bowl; at the right thigh, a bottle. Some limonite, doubtless used as yellow pigment, was with this burial.

Burial No. 28, a child, had in addition to a pot: two dumb-bell shaped beads of shell; two shell ear-plugs of different sizes; a flat, oblong, shell bead with crescentic excisions in four sides, and two central perforations.

Burial No. 33, adult, had a bottle at the feet, a bowl at the ankles, and, at the left shoulder, three carefully made implements of split bone, each rounded at one end, probably for use in basketry.

Burial No. 40, a child, had a worked astragalus of a deer near the head, and, on the pelvis, a bottle, a bowl, and a toy vessel representing a frog.

Burial No. 56, an adult, had in association near the head, a bottle and a bowl. A small, flint arrowpoint rested on a dorsal vertebra.

Burial No. 60, an aboriginal disturbance of the skeleton of a well-grown child, the skeleton being present only from the pelvis up. This burial had no fewer than eleven vessels arranged around the remaining parts. In addition, shell beads, some round, some flat, and an ear-plug of shell lay in place at each side of the head.

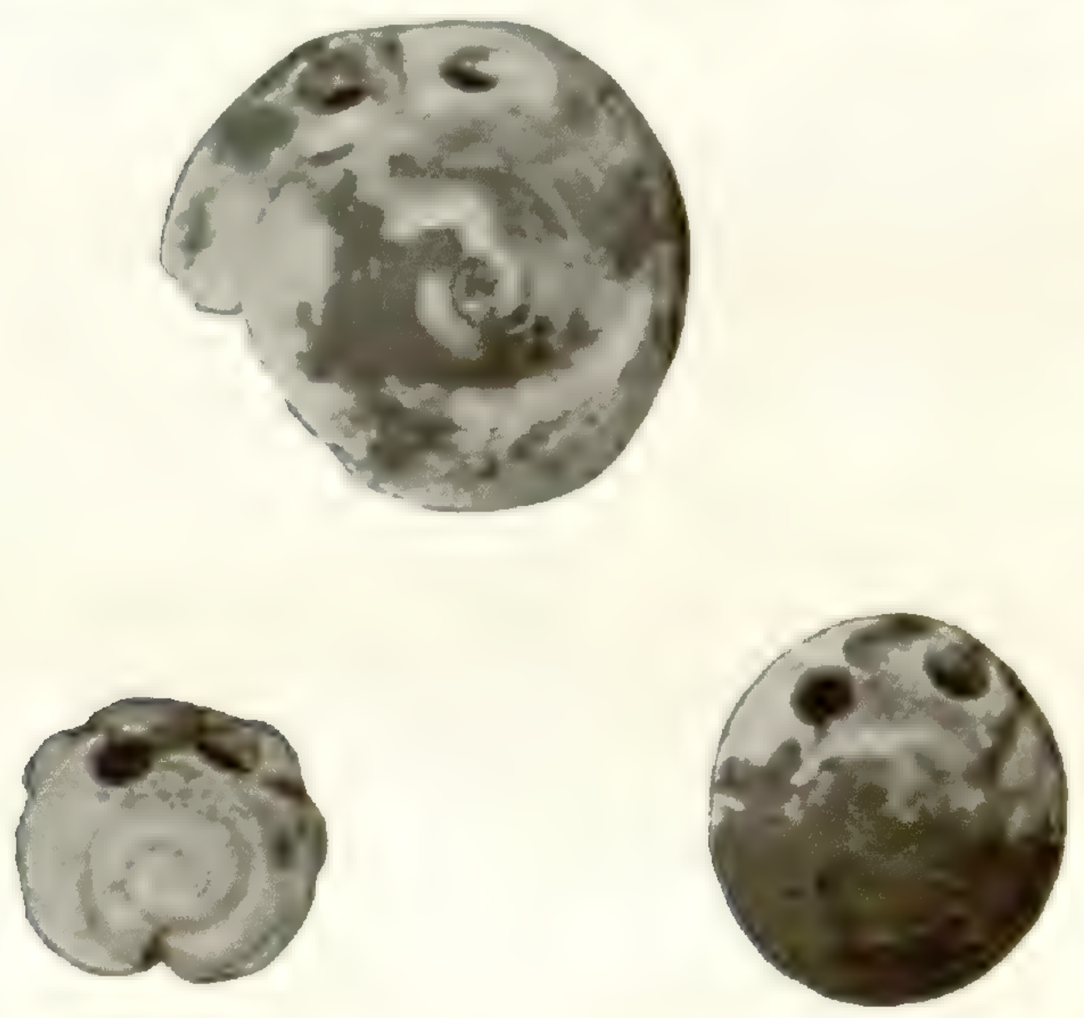

FIG. 62.—Ornaments made from spires of marine shells. With Burial No. 60. Pecan Point, Ark. (Full size.)

The ear-plugs found by us in the site at Pecan Point, with one exception which will be noted later, belong to the well-known class which somewhat resemble a mushroom in shape, though the head extends slightly more to one side than it does to the other. This class of ear-plugs have the shaft cut from the parietal wall of a large, marine univalve (*Fulgur*), and the head from parts to either side of the suture, as we have already explained in this report.

To return to Burial No. 60. With the beads, evidently a pendant with the necklace, was a canine tooth of a panther, grooved at one end for suspension. On the forehead of the

[1] At Pecan Point, in addition to the wing-bones found and recorded as belonging to particular burials, six other wing-bones were unearthed, some of which were with burials and some apart from them, presumably through disturbance. We cannot say with what burial any one of these bones was found, but Prof. F. A. Lucas kindly has identified the bones as follows: swan, 3; snow goose, 1; wild goose, 1; wild duck, 1.

skull lay a flint knife. Also with the beads was a pendant consisting of a small conch-shell (*Fulgur perversum*), perforated at the beak for suspension, and three ornaments made from spires of small conch-shells, each with two perforations (Fig. 62).

Burial No. 74, adult, had, in addition to a water bottle, two pairs of shell ear-plugs. Shell beads were at the neck.

Burial No. 82, an adolescent, lying partly flexed on the left side, had, at the right of the pelvis, a bottle and a bowl containing another bowl in which was a pot, all upright. Alongside these was a bowl within a bowl, both vertically placed. Shell beads were at the neck and a shell ear-plug at each side of the head.

Burial No. 85, adult, had red pigment near the skull and a bone implement with flat, rounded end, similar to those already described, lying at the right humerus. At the left of the skull and at the left shoulder, respectively, were two vessels.

Burial No. 101, a child, had a bowl and a bottle, also many small, flint chips and a single shell bead near the skull.

Burial No. 104, a child, had with it a wing-bone of a snow goose and the penis bone of a raccoon. Raccoon bones of this kind are sometimes found sharpened at the distal end for use as awls, but in this case, while the distal end is intact, the bulbous, or proximal, end is perforated as for suspension, though it is hard to see to what use the object could have been put. Possibly the perforation was placed in a bone intended for an awl which, for some reason, was left unfinished. In a Kentucky site[1] was found a similar bone of a raccoon, perforated at the proximal end and without a point at the opposite extremity.

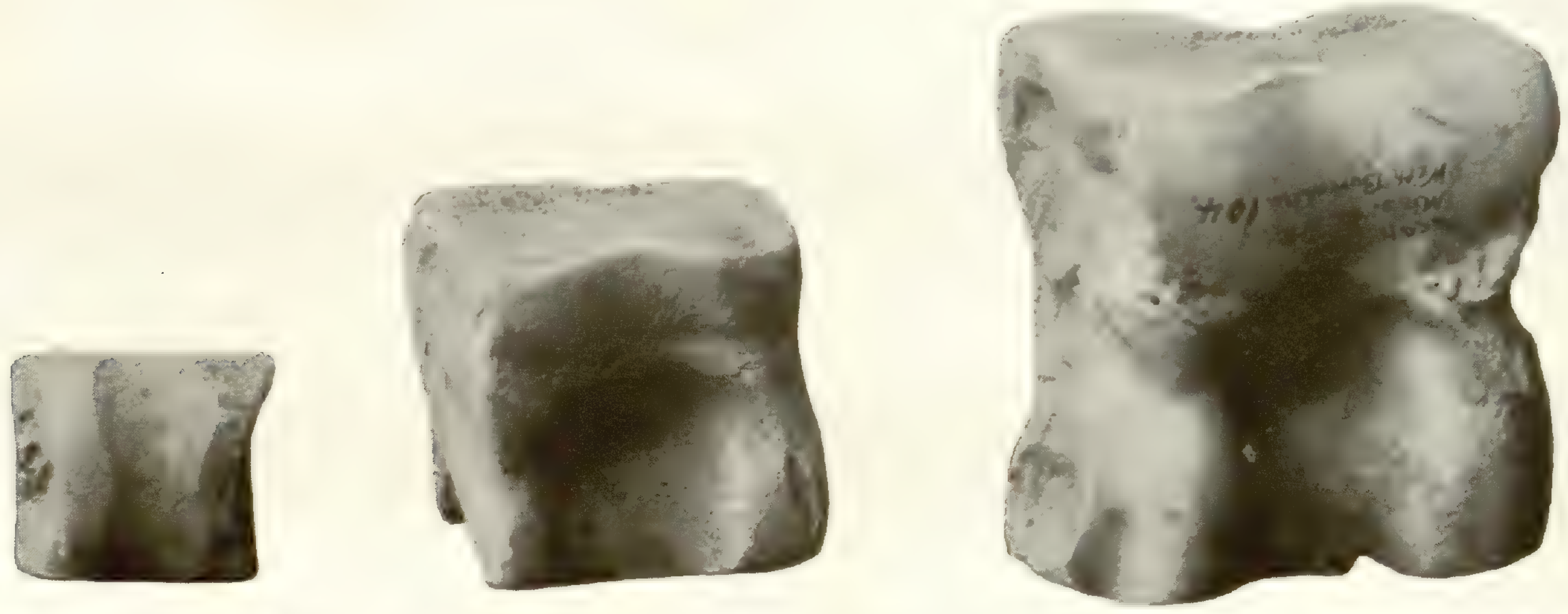

FIG. 63.—From left to right: astragalus of deer, of elk, and of bison, smoothed for use as dice. With Burial No. 104. Pecan Point, Ark. (Height of largest astragalus, 2.4 inches.)

Near the skull was red pigment, and over the left forearm, the left humerus, and the right shoulder, respectively, were a bowl, a bottle, and a bowl. Small shell beads were at the neck. At the left of the skull was a handsome discoidal of limonite with a secondary ferruginous coating.

[1] Harlan I. Smith. "The Prehistoric Ethnology of a Kentucky Site," Plate XLII 5. Anthropological Papers of the American Museum of Natural History. Vol. VI, Part 2.

Lying together, with this burial, was an interesting set of three astragali (Fig. 63) identified by Prof. F. A. Lucas as belonging to bison, elk, and deer, respectively. These astragali had been carefully smoothed in places and are of the kind found by us on the river from the Rhodes Place northward. The reader is doubtless aware that unworked astragali, or knuckle-bones, are very commonly found in aboriginal sites, and that such bones were used in games, but the finding of astragali in aboriginal sites in the United States, carefully smoothed as to certain parts to facilitate their use, presumably as dice, is unusual and possibly has not been reported before.

We are indebted to Mr. Charles C. Willoughby for the information that the only worked astragalus (with sides ground) that he recalls in the Peabody Museum, Cambridge, Mass., belongs to an ox and recently was obtained from Indians of Patagonia.

Mr. Culin [1] figures the astragalus of a bison which was used as a die by Papago Indians of Arizona. This astragalus, however, shows no workmanship.

Mr. Culin, who was on the point of starting on a protracted journey, kindly furnished, at our request, the following note as to worked astragali. Subsequently, after his departure, he sent a second note on the subject, which also we include. Presumably, had it been possible for us to reach Mr. Culin, the two notes, perhaps, with modification, would have appeared as one.

Mr. Culin in his first note says:

"I have carefully examined the worked astragalus from Pecan Point, Arkansas. I have never seen or heard of worked astragali being employed for any purpose among the North American Indians. Unworked knuckle-bones, either small ones of sheep or deer, or large bones of the ox were used recently as dice by a number of tribes in widely separated localities. I have described the astragalus of a bison collected by Dr. W. J. McGee, from the Papago who employed it in a game. I have collected knuckle-bones used as dice from several tribes, notably the Pomo and Maidu in California, who both have two games, one played with the knuckle-bones of sheep, goats or deer, and the other with a single large bone from an ox. These games are counted with sticks and are played like the stick dice game, but it is not unlikely that they were borrowed from the Spaniards.

"The Indians used small unworked knuckle-bones, as well as other small heavy bones, as weights on whirling toys, being tied in the middle of a sinew cord. It may be that the objects you found were used as dice. It is possible, but the evidence is inconclusive."

Mr. Culin's second note is as follows:

"The only worked knuckle-bone [astragalus] in the Field Museum of Natural History [Chicago, Ill.] is a single perforated specimen of medium size (llama ?) from the necropolis of Caldera, in Chile. It is associated with many other bone objects, flat strips of bone, all similarly perforated, as if for suspension, and pretty certainly

[1] Stewart Culin. "Games of the North American Indians," p. 148. Twenty-fourth An. Rep. Bur. Am. Ethn.

dice. We have here, therefore, a pre-Columbian worked knuckle-bone [astragalus] die, but the hole is merely for suspension."

Burial No. 107, adult, had below the neck, two beads of bone.

Burial No. 119, adult, had a bottle and a few shell beads at the right humerus.

Burial No. 121, adult, had at the skull a bottle and a mushroom-shaped object of earthenware of a class no doubt correctly believed to be modeling tools for pottery, by Holmes,[1] by Thruston[2] and by Fowke.[3]

Some have thought that objects of this kind were used to cover the openings of water bottles, and in point of fact a considerable collection of vessels made by modern Indians of British Guiana, now in the Academy of Natural Sciences of Philadelphia, includes numerous bottles with stoppers much resembling the object found by us at Pecan Point.

However, these mushroom-shaped objects of earthenware from prehistoric sites in the United States as a rule show considerable wear and, furthermore, are not found in numbers sufficient to warrant their being considered stoppers. One modeling tool could serve for many bottles, but a stopper would be needed for each one. Moreover, we do not recall having found at Pecan Point bottles with necks sufficiently slender to accommodate these mushroom-shaped objects, which, by the way, we have found in regions where bottles with slender necks are not known.

Burial No. 124, adolescent, had a pot, a bowl, and a bone implement doubtless used in basketry.

Burial No. 138, a child, had two shell beads at the neck.

Burial No. 150, an aboriginal disturbance of the skeleton of an adult, had shell beads at the neck, and was accompanied with two bottles, near one of which lay half of a flinty concretion that had been broken open and apparently polished along the surface of the fracture, giving the object the appearance of a diminutive bowl. At the right hand were three flint chisels and a celt of the same material. A handsome leaf-shaped weapon of flint, 12.5 inches in length and having a maximum thickness of one inch, lay at the left humerus. A beautiful discoidal stone of banded silicious rock was at the inner side of the right forearm, while a wing-bone of a swan lay near the skull.

Burial No. 152, adult, was accompanied with one bottle; near the skull was red pigment.

Burial No. 160, adolescent, had near the skull a bowl in which were two flat, circular pebbles. Lying inverted upon these was a spoon cut from a mussel-shell, above which was a large mussel-shell. With this burial also was a bowl rudely representing a fish.

Burial No. 162, adult, had at the right shoulder a ceremonial axe of the "hoe-shaped" variety, made from carboniferous slate, a material so soft that no imple-

[1] William H. Holmes. "Aboriginal Pottery of Eastern United States," Plate XXXV. Twentieth An. Rep. Bur. Am. Ethn.

[2] Gates P. Thruston. "Antiquities of Tennessee," Second ed., p. 161, Fig. 65.

[3] Gerard Fowke, citing Cristopher Wren. Proc. and Coll. Wyoming Hist. and Geol. Soc., IX, 156.

ment intended for practical use would be shaped from it. At the left forearm was a flint chisel, and at the left of the skull, a bottle.

Burial No. 164, adult, had as mortuary deposit, a bowl, a bottle, and seven badly decayed mussel-shells arranged in a pile, one within the other.

Burial No. 167, a child, had two pots, one on the right and one on the left elbow. A bottle was over the right shoulder. At each side of the head was a shell ear-plug, and at the neck were a small conch-shell perforated at the beak for suspension, and the spires of three similar shells each with a hole for suspension. Below the chin, on the chest, was a shell gorget of triangular form, which one usually finds decorated with a representation of a human face. In this instance, however, only holes for suspension are present. At the right forearm were two discoidal stones, each about 2.5 inches in diameter, and a small, flat, circular pebble.

Burial No. 168, adult, had at the right of the skull a tortoise shell, and at the left of it two bottles and a bowl.

Burial No. 171, adolescent, accompanied with seven vessels, one of which, a bowl, contained a pot in which was an astragalus of a deer, carefully smoothed as to some of its sides. In the containing bowl was a small pebble. Another bowl of this group held a pot in which was another astragalus of a deer, also squared for use in gaming. At the right side of the pelvis was a piercing implement of bone.

Burial No. 182, a child, in addition to a bottle and a bowl over the pelvis, had on the chest the remains of an undecorated gorget of shell.

Burial No. 185, adult, had near the skull a bottle, and at the right elbow a bottle and a bowl. Under the bottle was a flat pebble.

Burial No. 188, an adult with lower extremities cut away through aboriginal disturbance, had a cup and a bottle at the right humerus, and at the right shoulder, a bowl. At the left shoulder was a perforated disk made from a fragment of pottery vessel, and a wing-bone of a bird.

Burial No. 202, adult, had shell ear-plugs, one at each side of the head, with a perforation for attachment at the end of the shank of each.

Burial No. 222, adult, had a small quantity of red pigment near the skull. A bowl and a pot were with this burial.

Burial No. 228, a child, in addition to a bottle, a pot, a bowl, and a toy pot, had two ear-plugs of shell, of the kind almost universally found at Pecan Point, but having at the end of each shank a hole to fasten the ornament more securely. In addition this burial had a pair of the blunt-pin, or nail-shaped variety of ear-plugs, short with rounded head. At the neck were shell beads and a small pendant of talc (?), roughly three-sided, tapering slightly toward one end and having a perforation for suspension.

Burial No. 254, adult, had as mortuary deposit, a bowl, a bottle, and two shell beads.

Burial No. 272, adolescent. One shell bead lay at the neck of this burial, with which also one bottle had been deposited.

Burial No. 300, adult. At the right humerus was a leaf-shaped weapon of

chipped flint, 5 inches in length, and at the right femur, erect, edge downward as if it had been deposited with the hand grasping the handle, was a handsome, chocolate-colored, ceremonial axe of ferruginous shale (Fig. 64), 6.1 inches in length, and 2.6 inches in maximum breadth. In this axe is a perforation for attachment, rather irregularly made by boring from opposite sides. This type of ceremonial axe, oblong in outline, is seldom encountered. One, of lignite, from the St. Francis river, Arkansas, is in Peabody Museum, Cambridge, Mass., and two were found by us at the Keno Plantation, northern Louisiana, one of sandstone and one of metamorphic rock.

Burial No. 302, adult, had at the right elbow a small amount of red pigment and a chisel wrought from a flat pebble, by sharpening one end. A bowl and a bottle lay with this burial.

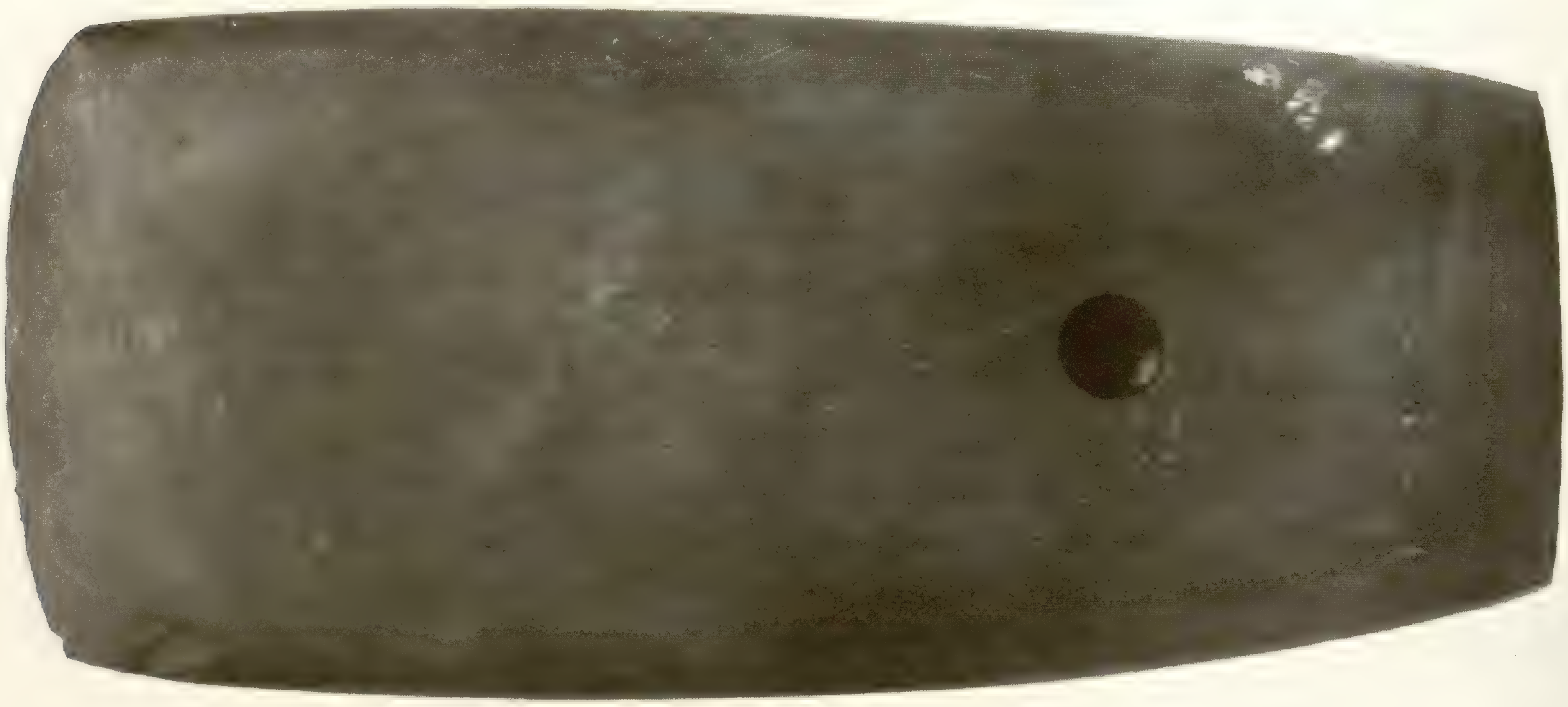

FIG. 64.—Ceremonial axe of ferruginous shale. With Burial No. 300. Pecan Point, Ark. (Full size.)

Burial No. 305, a child, had a small bottle representing a fish, a diminutive bowl in the form of a frog, and a bowl having conventional head and tail on opposite sides, in which were a mussel-shell and a round, flat pebble.

Burial No. 309, adult, had in addition to a bottle, red paint at the left humerus; a gorget of shell made from a triangular section of a conch, without decoration; and a curious object of bone at the left forearm, so badly decayed and broken that its former size and shape could not be determined. It seemed, however, to have been a receptacle made from part of a large bone, split and hollowed. The thinness of the walls and the length of the hollowed space seem to discredit the idea that the object had served as a handle.

Burial No. 311, a child, had a bowl, a bottle, and a small, oval, undecorated ornament of shell, with two perforations.

Burial No. 325, adult, had a bowl at the right of the skull and a bottle at the right shoulder. On the upper part of the thorax, the broad end under the chin,

lay a disappointment in the shape of a perfectly preserved gorget of shell somewhat more than 7 inches in length and 6 inches in maximum breadth, having two perforations in the upper, or broader, part, and one near the opposite end. This gorget, of a type so often representing the human face, is without decoration of any kind.

Burial No. 326, the skeleton of an adult, showing slight disturbance, had at the right of the skull, one within the other, two earthenware vessels representing shell forms, and a bottle at the right humerus. Near this bottle were a small quantity of paint; three cylinders shaped from tines of antler; a piercing implement about 6 inches in length made from a section of a bone, having at one end nine notches on one side.

Burial No. 333, adolescent, had two rude, discoidal stones at the left of the pelvis.

Burial No. 340, adult, had a small quantity of red pigment near the skull and two shell beads at the neck. A bowl and a bottle also were with this burial.

Five hundred and thirty-five vessels of earthenware, broken and whole (two hundred and sixty-three of which were left with Mr. Friend, the owner of the Pecan Point Plantation), were found by us during our investigation. Of these, eleven were apart from burials, probably as a result of aboriginal disturbance.

The vessels from this place, as a rule (with many exceptions), lay near the skulls, and often a deposit consisted of a bowl and a bottle. A number of burials, however, were without deposits of earthenware, while some had only one vessel and a few had each a considerable number of them. The arrangement of vessels in respect to each other was simple. A few lay within others, but cases of surmounting vessels, inverted or otherwise, were rare.

The earthenware from Pecan Point is shell-tempered as a rule, but on the other hand, often it is not of the shell-tempered kind. The ware is of fairly good quality. The forms are almost invariably confined to the bottle, the bowl, and the pot, and these, as a rule, vary but little from standard shapes.

Bottles almost universally are of the wide-mouthed variety, and, save in a few instances, without superficial decoration, though many of them have an added attraction in the form of a projecting annular or discoidal base which, incidentally we may say, was often, if not always, made separately from the body of the vessel and added to it previous to the firing.

Strangely enough, the bottle with the tripod support, a not uncommon form in the Middle Mississippi region, was not found by us at Pecan Point.

Though the surface of much of the ware from Pecan Point could readily have lent itself to engraved, incised, or trailed decoration, such decoration is seldom found upon it, and when present it is almost invariably of the rudest kind. However, incised decoration on earthenware, as the reader knows, is not looked for to any extent in the Middle Mississippi region. On the other hand, the use of pigment for decoration of earthenware was a favorite method in that region and was extensively practised by the potters of the St. Francis river sites to the westward of Pecan Point. Taking this into consideration it is rather a surprise to know that

but twelve vessels decorated in color were found by us at Pecan Point, and these, with the exception of the head bottle to be described later, show little variety in design.

Many mussel-shells, separately or occasionally in pairs, lay within or beside vessels at this place.

We shall now consider earthenware from Pecan Point, having features of interest.

Vessel No. 31, a bottle, has four equidistant depressions in the body, but is otherwise undecorated. This form of decoration in regions where potters were given to the use of incised designs would have, in addition, much incised decoration in which the depressions would occupy central positions.

Vessel No. 330, a bottle of ordinary form as to the body, but showing markings whence a head, a tail, and four legs apparently had been broken away. Animal forms and pots with the additions we have named occasionally are found in the Middle Mississippi region, but a bottle with a globular body, with head, tail, and legs is rare indeed. A fine bottle bordering on this class, though the body is not entirely globular, is in the collection of Mr. E. E. Baird of Poplar Bluff, Mo.[1]

Vessel No. 333, a pot of ordinary ware, having around the portion below the rim a decoration of upright fillets in relief. On the body are vertical, parallel, incised lines, very rudely executed. On the base of the vessel is a circle containing a swastika.

Vessel No. 463, a bowl almost 4.5 inches in diameter of body, having on one side, projecting outward and upward, the modeled head of a bird. On the opposite side is a tail extending horizontally, having six deeply incised, parallel lines on the upper surface. In this tail are two holes for suspension; a single hole traverses the neck of the bird on the opposite side.

Vessel No. 475, a pot about 6 inches in diameter, has on opposite sides a conventional head and tail of a fish; on two other opposite sides, dorsal and ventral fins are represented. On one side of the vessel are two holes for suspension, while on the opposite side are the same number of semi-perforations which, for some reason, have not been completed.

Vessel No. 229. This bottle, shown in Plate XXXV, received a blow from a spade on one side, the restored part showing somewhat to the left in the illustration. The body is decorated with vertical bands, white and red, the red bands being of different widths alternately. The neck has had a uniform coating of red pigment, much of which has disappeared through wear.

Vessel No. 160. A bottle of coarse, shell-tempered ware, of a well-known type in the Middle Mississippi region, has a double neck arching to form a short, vertical one at the union of the two.

Vessel No. 173. A bottle of hard, black ware, 7.2 inches in height, having in relief on the upper part of the body, surrounding the neck, the symbol shown in

[1] W. K. Moorehead. "The Stone Age in North America," Vol. II, p. 281.

PECAN POINT, ARKANSAS, VESSEL NO. 229. (HEIGHT, 8.6 INCHES.)

COCKAYNE, BOSTON.

Fig. 65, the meaning of which, as we have said, is in doubt, though its use in aboriginal times was comparatively widespread. We find it engraved on pottery and *repoussé* on sheet-copper from the great site at Moundville,[1] Ala., and carved on stone from the region bordering the lower Arkansas river.[2] It is seen in relief on pottery from Arkansas,[3] and we have found the symbol in that State, forming the outline of bowls, along the St. Francis and Mississippi rivers.

FIG. 65.—Symbol of unknown meaning.

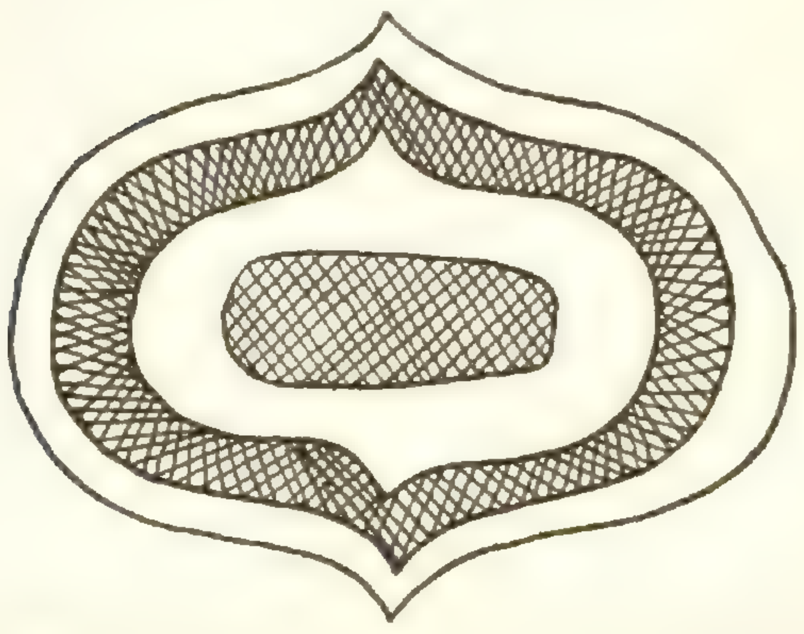

FIG. 66.—Symbol of unknown meaning, from a vase, Moundville, Ala.

Incidentally it may be said that the symbol in question, when it does not appear in relief on a bottle or as an outline of a bowl (in which case no particular position can be assigned to it), is almost invariably represented with the pointed parts vertically placed and also has centrally an elliptical figure perhaps representing an orifice. In Fig. 66 is shown one of these symbols which is engraved on a vase from Moundville, Ala.

Vessel No. 144. We show here in Fig. 67 a bowl shaped in outline to resemble the symbol to which reference has just been made.

Vessel No. 459. This bottle, 3.9 inches in height, has lost much of its neck in aboriginal times, though the margin of fracture has been smoothed down by the aborigines to allow continued use of the vessel. The decoration has consisted of a considerable number of vertical bands alternately red and black, though on some of the bands little trace of the black remains.

Vessel No. 136. This interesting pot (Fig. 68), a life form representing a quadruped of some kind, is of hard, black ware showing considerable polish. The type is unusual, and resembles somewhat that of a vessel found by us on the lower Arkansas river,[4] which, however, is inferior in some respects to the one under description. The decoration on this vessel consists of designs based on the swastika and of swastikas enclosed in circles.

Vessel No. 317. In Fig. 69 is shown a very interesting bottle. On two opposite sides, in relief, are modeled human faces, while on two other opposite sides,

[1] Clarence B. Moore. "Certain Aboriginal Mounds of the Black Warrior River" and "Moundville Revisited," *passim*. Journ. Acad. Nat. Sci., Phila., Vol. XIII.

[2] William H. Holmes. "Certain Notched or Scalloped Stone Tablets of the Mound Builders." Amer. Anthropologist, Jan.-Mar., 1906.

W. K. Moorehead. "The Stone Age in North America," Vol. I, p. 452.

[3] William H. Holmes. "Aboriginal Pottery of Eastern United States," Plate XIIIf. We found this symbol in relief on no fewer than eight bottles at Pecan Point, Ark.

[4] "Certain Mounds of Arkansas and of Mississippi," Fig. 7. Journ. Acad. Nat. Sci., Phila., Vol. XIII.

also in relief, human hands are represented. Between the hands and the faces are four long-bones, in relief. This decoration, which must be very unusual[1] on pottery in this region, calls to mind the human long-bones engraved on bottles found by us in the great site at Moundville, Ala.[2]

FIG. 67.—Vessel No. 144. Pecan Point, Ark. (Diam. 9.75 inches.)

[1] In the collection of Mr. I. McGirk Mitchell of St. Louis, Mo., is a fine bottle said to have come from near Blytheville, Ark., which bears in relief three hands, three faces, and seven long-bones, all very similar to those shown on the vessel under description.

[2] "Certain Aboriginal Remains of the Black Warrior River," p. 226 *et al.*
"Moundville Revisited," p. 369. Journ. Acad. Nat. Sci., Phila., Vol. XIII.

FIG. 68.—Vessel No. 136. Pecan Point, Ark. (Height 5.5 inches.)

FIG. 69.—Vessel No. 317. Pecan Point, Ark. (Height 9 inches.)

Vessel No. 228. The human effigy bottle shown in Fig. 70 is devoid of especial interest save that incised lines appear on the face and probably represent a decoration painted or tattooed.[1]

FIG. 70.—Vessel No. 228. Pecan Point, Ark. (Height 8.2 inches.)

Vessels Nos. 267 and 296. In Figs. 71 and 72 are shown two human effigy bottles which are of interest simply as coming from the great Pecan Point site.

[1] For method of tattooing among Indians of the Mississippi Valley, see John R. Swanton, "Indian Tribes of the Lower Mississippi Valley and adjacent Coast of the Gulf of Mexico," pp. 56, 57, Bul. 43, Bur. Am. Ethn.

Vessel No. 176. This human effigy bottle (Fig. 73) varies from the general type of such bottles from this region in that a space for suspension is provided on each side of the bottle, below the shoulder of the figure.

Fig. 71.—Vessel No. 267. Pecan Point, Ark. (Height 8.75 inches.)

Vessel No. 206. This graceful bottle of polished, black ware (Fig. 74), having the aperture at the back of a representation of a human head modeled in relief, is not of an unusual type in this region, but is shown here on account of its grace of form.

FIG. 72.—Vessel No. 296. Pecan Point, Ark. (Height 4.9 inches.)

FIG. 73.—Vessel No. 176. Pecan Point, Ark. (Height 6.9 inches.)

FIG. 74.—Vessel No. 206. Pecan Point, Ark. (Height 5.3 inches.)

Vessel No. 202. A small bottle of yellow ware, similar to others figured as coming from this region. The aperture is placed at the back of the modeled head of some quadruped (Fig. 75).

FIG. 75.—Vessel No. 202. Pecan Point, Ark. (Height 3.8 inches.)

Vessel No. 497. A bottle (Fig. 76) having by way of decoration, modeled in relief at the base of the neck, a cross of the four directions, each arm of which is the well-known step-design, or cloud-symbol. As this design, being of the same shade as its background, the body of the bottle, did not lend itself to successful photographic reproduction, the half-tone illustration is made from a wash-drawing of the vessel.

FIG. 76.—Vessel No. 497. Pecan Point, Ark. (Height 5.9 inches.)

Vessel No. 91. A bottle 4.7 inches in height, of light-brown ware, with short, wide neck, having in red pigment on the body four volute designs based on the swastika. On the neck are step-patterns, or cloud-symbols, in the same color.

Vessel No. 254. A bottle 7.75 inches in height, to which a wide and slightly flaring neck contributes 3.5 inches. On the body is a design somewhat similar to the one on the vessel just described—a well-known decoration on earthenware from this part of the Mississippi river and from the St. Francis river, Ark., to the westward. The design on this bottle, however, differs from the other in that, instead of having a back-ground of the ware, all space between the red pigment markings is filled in with white, or, perhaps more properly speaking, a cream tint. On the neck has been a decoration in red pigment, now almost obliterated. There is a discoidal, projecting base.

Vessel No. 272. A bottle 5.8 inches in height, of a rather common type, representing a fish with head, tail, and fins, in relief. The only feature of particular interest of this vessel is that its short, wide neck has two loop handles on opposite sides.

Vessel No. 283. A life-form representing a shell drinking-cup wrought from the conch (*Fulgur*), the beak and the spire being clearly indicated. Height, 2.5 inches.

Vessel No. 531. This bottle of compound form, having three encircling lines of punctate markings around the lower part of the neck, above which are four conventional handles without openings, and an annular base, belongs to a class of which a number of examples were found by us at Pecan Point. A similar vessel is figured by Holmes.[1]

Vessel No. 68. A bottle 6.7 inches in height, also similar to one figured by Professor Holmes,[2] having an animal head projecting from the neck, the opening being at the back of the head.

Vessel No. 464. A bottle 3.6 inches in height, whose body is a life-form representing a fish seen in profile. The head, tail, and dorsal and ventral fins are represented, but with no high degree of excellence. An interesting and unusual feature is the vent in place, clearly modeled in relief.

Vessel No. 55. A bottle very rudely made, 4.2 inches in height, the body having the form of a fish on which, in relief, are the usual head, tail, and fins. A noteworthy variant, however, is the head of some animal indistinctly modeled on the neck of the bottle.

Vessel No. 88. This pot, rather coarsely made, has on one side, in relief, a modeled head representing that of a raccoon. On the opposite side is a conventional tail. The body of the bowl has very roughly executed incised decoration. A vessel in many respects similar to this one is figured by Holmes[3] as coming from Arkansas, and a vessel also recalling this one, with a modeled raccoon head on each of two opposite sides, was found by us at the Rose Mound,[4] St. Francis river, Ark.

Vessel No. 246. A bowl 6 inches in maximum diameter, having a rim projecting horizontally. On one side, extending upward, is a modeled representation of a human head, from which the features have partly disintegrated. On the opposite side, extending horizontally, is the modeled figure of a quadruped, from which the tail is missing. This figure has projections along the back such as are seen on many human effigy bottles, and which, as we know, are introduced to indicate the vertebræ.

Vessel No. 230. A pot having in relief the head and legs of a frog. The tail is represented by a disk in relief.

Vessel No. 431. A bottle 7.3 inches in height, with wide neck about 3 inches

[1] *Op. cit.*, Pl. XIIId.
[2] *Op. cit.*, Pl. XXVa.
[3] *Op. cit.*, Pl. XXIVb.
[4] "Antiquities of the St. Francis, White, and Black Rivers, Arkansas," Fig. 29.

PECAN POINT, ARKANSAS, VESSEL NO. 13. (HEIGHT, 7.6 INCHES.)

COCKAYNE, BOSTON.

high, having around it a decoration consisting of a uniform coating of red paint, has a painted design on the body, based on the swastika, with spiral arms. The spirals in this case, however, show less curve than usual, and have a somewhat squared appearance.

Vessel No. 13. In Plate XXXVI is shown a head bottle, a variant from the well-known and interesting type of head vases which we believe (speaking of the United States) are found only in northeastern Arkansas and in southeastern Missouri. At the time when Professor Holmes wrote his "Ancient Pottery of the Mississippi Valley,"[1] he had met with but eight head vases, all of which had been found in this Pecan Point site. In later years other head vases have been discovered, but in comparatively small numbers; so the vessels are as rare as they are interesting.

We have been enabled to trace the present ownership of the following specimens of the head vessel type:

Eight in the National Museum, Washington, D. C., and in the Davenport Academy of Science, Davenport, Iowa; all from Pecan Point, Ark.

One in the collection of the Cossitt Library, Memphis, Tenn., said to have been found at the Bradley Place, which is not far from Pecan Point.

One in the collection of Mr. I. McGirk Mitchell of St. Louis, Mo., and another belonging to Mr. H. M. Braun of East St. Louis, Ill.; both from a site near Blytheville, northeastern Arkansas, not far from the Missouri line.

One "from Mississippi County, Ark.," the property of Mr. E. E. Baird, of Poplar Bluff, Mo.

One in Peabody Museum, Cambridge, Mass., from the Fortune Mound, St. Francis river, Ark.

One in the Cincinnati Art Museum, Cincinnati, Ohio, from the mound at Parkin, St. Francis river, Ark.

Two in the Academy of Natural Sciences of Philadelphia, Pa., from the Rose Mound, St. Francis river, Ark.

Several in the collection of the Missouri Historical Society, St. Louis, Mo., described as coming from southeastern Missouri.

A handsome bottle with faces and ears modeled in relief on two opposite sides in the collection of Mr. George J. Mepham of St. Louis, Mo., who informs us that it came from a mound in Mississippi County, Mo.

The head bottle under description, from Pecan Point, Ark., now in the Academy of Natural Sciences of Philadelphia, Pa.

There is also a class of vessels found near Little Rock, Ark. (and possibly elsewhere), which can hardly be called head vases or head bottles but which nearly approach such vessels. The vessels in question bear faces modeled in low relief, and little effort has been made to have these vases conform to the shape of the human head. In fact, the face does not always seem to have been intended to represent the human features. The faces, moreover, sometimes occupy but a small

[1] William H. Holmes. Fourth An. Rep. Bur. Ethn., 1882–83, p. 406 *et seq.*

space on the vessels on which they are modeled. Examples of this class of vases are figured by Holmes.[1]

In a small collection of aboriginal pottery in the Courthouse[2] at Little Rock, Ark., was a vessel of the "teapot" type having on one side a face modeled in relief. We have in vain attempted to obtain a photograph of this interesting vessel.

FIG. 77.—Vessel No. 218. Pecan Point, Ark. (Height 7.8 inches.)

As we have said before in this report, the "teapot" vessel and the head vase, both specialties of Arkansas (though a few "teapot" vessels are found in Mississippi and some head vases come from southeastern Missouri), are not, as a rule, found in the same parts of the State, the southernmost discovery of head vases and the northernmost occurrence of "teapot" vessels being, we believe, the Rose Mound, on the St. Francis river, Ark.

[1] William H. Holmes. "Aboriginal Pottery of Eastern United States," Pl. XXIXa and b.
[2] At the time of our visit in 1908.

In speaking of head vases and "teapot" vessels, be it remembered, we have reference only to territory included in the United States.

In Professor Holmes' "Ancient Pottery of the Mississippi Valley"[1] and in his "Aboriginal Pottery of Eastern United States."[2] the subject of head vases is exhaustively treated and fully illustrated. The question of head vases also is considered in "Prehistoric Art.[3]

We shall now end this digression and return to the head bottle from Pecan Point.

FIG. 78.—Vessel No. 97. Pecan Point, Ark. (Height 5.5 inches.)

The ware is light brown, containing a certain amount of shell-tempering. The base of the bottle projects downward and seems to have been modeled to represent the human neck, while the body of the bottle has been given the shape of the head. The face, including the ears, is modeled on it in relief. The face, ears, and neck have a coating of red pigment, but the remainder of the vessel is without the addition of coloring. Each ear shows two perforations, a number smaller than head vessels usually have, though the ears of human effigy vessels from the Middle Mississippi region are, as a rule, shown as having but one perforation, which is

[1] Fourth An. Rep. Bur. Ethn., p. 406 *et seq.*

[2] Twentieth An. Rep. Bur. Am. Ethn., p. 96 *et seq.* Pls. XXIX, XXX, XXXI, XXXII, XLIII.

[3] Thomas Wilson. Rep. U. S. National Museum, 1896, p. 475 *et seq.*

placed in the lobe of the ear. The ears on some head vessels show a vertical row of perforations near the posterior margin of the cartilaginous part of the ear, somewhat similar to perforations found in the ears of some of our modern Indians. In a recent work[1] is a photographic portrait of a Crow Indian having three perforations placed vertically, two near the margin of the cartilaginous part of the ear and one in the lobe.

FIG. 79.—Vessel No. 304. Pecan Point, Ark. (Height 4.2 inches.)

Vessel No. 218. This bottle (Fig. 77) is shown to illustrate a class of wide-mouthed bottles with long necks, found in the Middle Mississippi region.

Vessel No. 97. A bottle of compound form (Fig. 78), rather graceful in outline, having around part of the neck a decoration composed of incised, vertical lines, above which is a series of conventional handles, solidly placed on the neck.

Vessel No. 304. A bottle of thin, dark ware, shown here on account of its grace of form (Fig. 79).

Vessel No. 43. This bottle (Fig. 80) has by way of decoration on the body, alternate vertical bands of red and of white pigment. On the neck are shown step-designs, or cloud symbols, in white and in red, the white upright, the red inverted.

Vessel No. 386 is a bowl (Fig. 81) with a rude animal head and tail, to which are added in relief the fore-legs and hind-legs of the quadruped intended to be represented.

Vessel No. 123. This pot (Fig. 82), with incised decoration made up of series of parallel lines running diagonally, alternately reversed, is interesting as showing

[1] James McLaughlin. "My Friend the Indian," plate facing p. 40.

Fig. 80.—Vessel No. 43. Pecan Point, Ark. (Height 7.8 inches.)

Fig. 81.—Vessel No. 386. Pecan Point, Ark. (Height of bowl 3.7 inches.)

the usual style of incised decoration which prevailed in the Middle Mississippi region. A series of conventional handles surrounds the neck.

Vessel No. 328. This handsome bowl, without decoration on the inside, has exteriorly a striking incised design exceptionally well-executed considering the region whence it came. The design consists of a cross surrounded by current scrolls. Below the margin of the bowl is a series of conventional handles (Fig. 83).

FIG. 82.—Vessel No. 123. Pecan Point, Ark. (Height 4.1 inches.)

It is interesting to note, in connection with the site at Pecan Point, the almost total absence of decoration on objects other than vessels of earthenware, which were found at the place. Numbers of piercing implements of bone were unearthed there by us, but only one of these bears decoration of any importance. But the objects from Pecan Point on which lack of embellishment is most noticeable are the shell gorgets. These objects, unlike the bone implements, served no utilitarian purpose, their function being purely ornamental, and when on objects of this kind no decoration is present, as is the case with those from Pecan Point, the omission is striking, especially as gorgets of shell from Tennessee and even from sites on the St. Francis river, Ark., not far westward from Pecan Point, often bear interesting designs.

Another fact worthy of remark is that throughout all our work at Pecan Point, but one pipe was encountered.

The Stoffle Place, Mississippi County, Ark.

About five miles NNE. from the landing whence a road leads to the town of Wilson, is a mound about 8 feet in height, two hundred yards from the river, approximately. This mound, 100 feet and 75 feet in basal diameters, has been used as a cemetery in recent times. It is on the plantation of Mr. T. M. Stoffle, who resides on the place.

In the cultivated field surrounding the mound is ground somewhat higher than the rest of the adjacent land, and from this area it was said, a mixed-blood Indian, a dealer in aboriginal pottery, had taken many relics. Traces of his work were found throughout it by us.

FIG. 83.—Vessel No. 328. Pecan Point, Ark. (Diam. 9.75 inches.)

Trial-holes, sunk by us in this ground, resulted in the discovery of twenty-three burials, some of which had been badly disturbed, while deposits of pottery with the skulls of others, which had been discovered by the aid of the sounding-rod, had been dug down to and removed.

Burials were as follows:

Adults, 10

Infants and children, 7

Disturbances, aboriginal and recent, 6

Of the ten adult burials, nine lay extended on the back; one was rather closely flexed on the left side with the trunk so turned as to have the face directed downward.

In the soil, apart from burials, but perhaps separated from them through previous disturbance, were a celt of igneous rock, pecked on parts intended to enter a handle, and an astragalus of a deer, carefully smoothed on some of its sides.

Burial No. 4, adult, had a bowl at the left of the skull; at the outer side of the femur, a bone pin with a head, and a considerable number of very slender implements of bone, originally about the size of wooden tooth-picks in use at the present time, only much more delicately shaped. Many of these were badly broken, but some have since been repaired. Just such a deposit of small, bone implements is described by General Thruston[1] as having been found in an aboriginal cemetery in Middle Tennessee.

Burial No. 7, a child, was without artifacts with the exception of a large disk shaped from a potsherd, which lay near the skull.

Burial No. 10, a child, had a pot over the right femur. With this vessel was a sphere of pottery about .75 inch in diameter. Similar objects have been found in other parts of Arkansas and in Tennessee.

Burial No. 12, a child, had two discoidal stones rudely shaped from pebbles originally flat, and two astragali of deer which, however, show no sign of workmanship. With this burial also were a bowl and a bottle.

Burial No. 16, a child, had two pots at the left of the skull, and, on the chest, a canine tooth of a bear, perforated at one end for suspension.

Burial No. 17, adult, had in association a pot over the left humerus; a bottle and a bowl at the pelvis; a thin and graceful leaf-shaped implement of flint, 8.5 inches in length, across the pelvis; and two carefully-made piercing implements of bone, each with a hole for suspension at the blunt end.

Twenty-four vessels were found by us at the Stoffle Place, which, however, must be a considerably smaller number than originally had been placed with the burials we discovered. These vessels, which are of inferior ware, present no feature of especial interest. A small bottle with a band of red and a band of white pigment around the neck, and alternate upright bands of red and of white around the body, was the only example of color decoration on the pottery found by us at this place.

[1] Gates P. Thruston. "Antiquities of Tennessee," Second ed., p. 306.

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September, 1911.

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Extra copies printed for the Author, September [illegible]

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A Form of Urn-burial on Mobile Bay. American Anthropologist, Jan.-March, 1905.

Certain Aboriginal Remains of the Black Warrior River [Moundville]; Certain Aboriginal Remains of the Lower Tombigbee River; Certain Aboriginal Remains of Mobile Bay and Mississippi Sound; Miscellaneous Investigation in Florida. Journ. Acad. Nat. Sci. of Phila., 1905. Vol. XIII. Quarto, 206 pages. Maps, illustrations in text.

Moundville Revisited; Crystal River Revisited; Mounds of the Lower Chattahoochee and Lower Flint Rivers; Notes on the Ten Thousand Islands, Florida. Journ. Acad. Nat. Sci. of Phila., 1907. Vol. XIII. Quarto, 144 pages. Maps, illustrations in text.

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Some Aboriginal Sites on Red River

BY

CLARENCE B. MOORE.

PHILADELPHIA:
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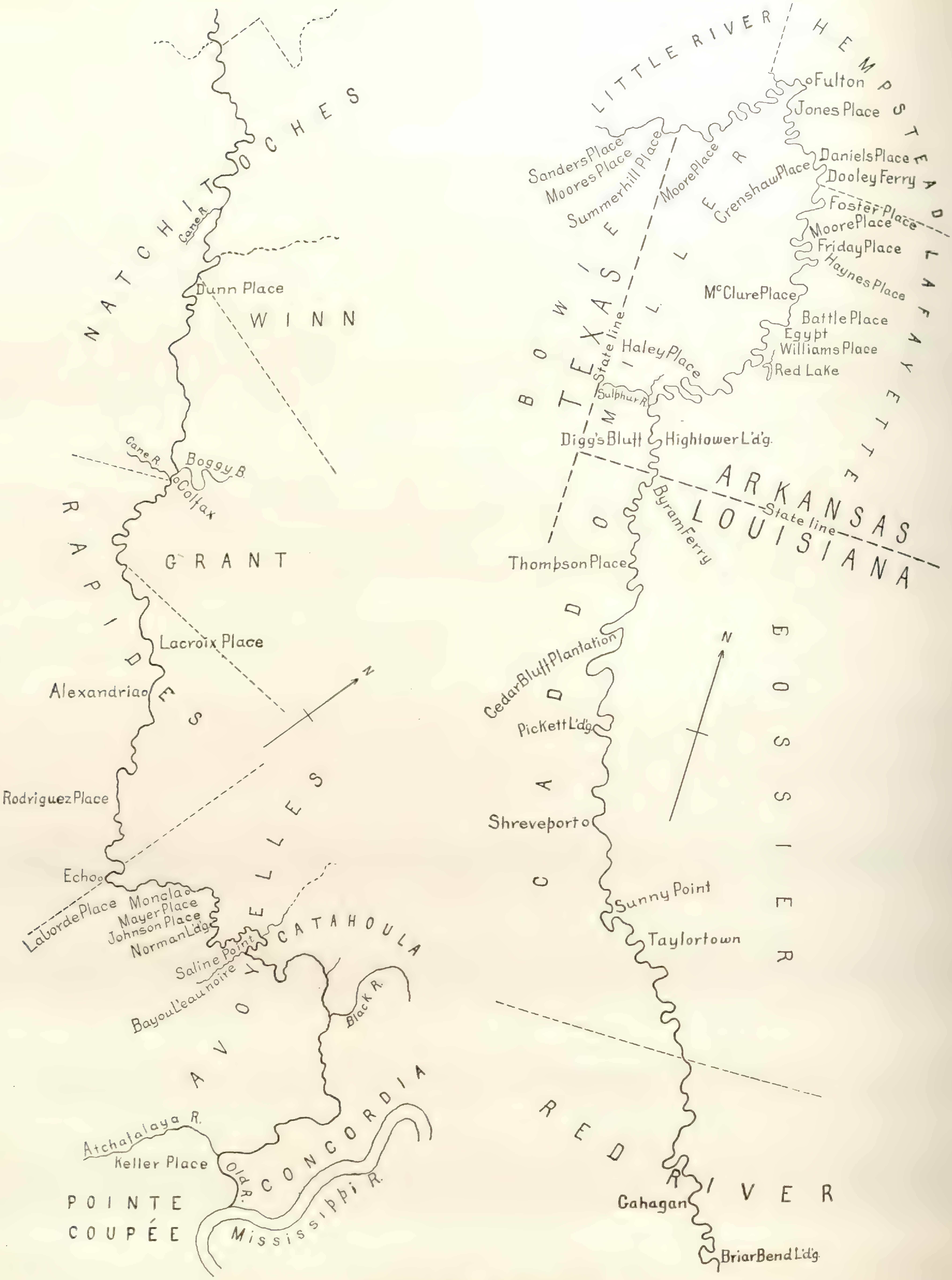

MAP OF PART OF RED RIVER

Scale in miles
0 5 10 15 20

1912

SOME ABORIGINAL SITES ON RED RIVER.

By Clarence B. Moore.

INTRODUCTION.

Red river has its source in extreme northwestern Texas and takes an easterly course, bounded most of the way on the north by the State of Oklahoma and on the south by Texas, until southwestern Arkansas is reached, where the river continues in the same direction, having Little River county, Arkansas, on the north and Bowie county, Texas, on the south. Next, Red river, still pursuing an easterly course into Arkansas, has part of Little River county to the north of it and Miller county to the south until within a short distance from the town of Fulton, whence the stream takes a southerly course, having Hempstead and Lafayette counties on the east and Miller county on the west, until it enters the State of Louisiana.

In Louisiana, Red river flows in a southerly and then southeasterly direction until it joins the Atchafalaya river (locally pronounced Chaf-al-eye-yeh) which continues southward, while a continuation of Red river, called Old river[1] on charts prepared by the United States Corps of Engineers, goes a distance of eight miles by water eastward to Mississippi river.

Our investigation, this season, occupied slightly less than five months of the latter part of 1911 and the earlier portion of 1912 and covered Red river (and Old river) from the junction with Mississippi river to a point 37 miles by water[2] above Fulton, Arkansas, or 519 miles in all, as the river runs.

As we have explained in previous reports, our archæological investigation is conducted from a steamer of light draught, one hundred feet in length, over all, which enables us to carry material necessary for the work and an ample force of men to attend to it.

Mr. J. S. Raybon, captain of our steamer, as a rule goes over in advance such territory as we have selected for our investigation, ascertaining the exact location of mounds and of cemeteries and the names and addresses of the owners of these aboriginal sites, so that, later, our work may be carried on without the delay incidental to search and to correspondence.

[1] Presumably in former times what is now called Old river was part of the Mississippi. As Red river is now connected with the Mississippi by Old river, this river may be regarded as a continuation of Red river, and in fact the junction of Old river with Mississippi river is almost universally spoken of as the mouth of Red river.

[2] Measured miles, as given by charts furnished by the United States Corps of Engineers.

The preliminary work of Captain Raybon and a companion occupied parts of two summers and covered Old river and all that part of Red river investigated by us with the exception of the small portion above Fulton and of that part of the stream which lies between its union with Black river and its junction with Atchafalaya river, 27 miles by water, which is mainly swamp and which we, in our boat, searched over three times with negative results.

Near Natchitoches (pronounced Nack-ee-tosh) Red river divides, uniting near Colfax, below, a distance of about 43 miles by water. The westernmore course of the river is known as Cane river. This part also, now navigable only in times of fairly high water, was carefully searched by Captain Raybon but was not investigated by us since the report as to the antiquities along it was unfavorable.

Previous to our work there had been no investigation of the antiquities of Red river: digging by treasure-seekers; the occasional putting down of small holes in mounds by local residents impelled by curiosity; or infrequent demolition of portions of high places by collectors with the aid of scoops drawn by horses, can scarcely be termed investigation.

Unfortunately, our own investigation of that part of the river covered by us was of necessity far from complete. Aboriginal cemeteries which are in level ground where unlimited digging may be done, for reasons to be given later, are almost absent along Red river, so that our field for productive work was restricted to mounds. Now, much of the Red river country is an overflow region, and mounds are often places of refuge for domestic animals and occasionally for inhabitants, in periods of high water, so that the destruction of mounds or work done on them which may lead to their destruction through wash of water, is entirely out of the question. Consequently, we were not always able to determine the exact nature of mounds. However, in the case of large, flat-topped tumuli along Red river we believe it can be said, as of the same class of mounds in many other regions, that they were built for places of residence and that they do not contain burials except occasionally, and when burials are found in them they are superficial.

Our investigation along Red river was impeded also by the flood that prevailed during the latter part of our trip, which prevented our visiting a few mounds and in several cases interfered with our work in others. Nevertheless, we believe we shall be able to give a general idea of the antiquities of somewhat more than the lower five hundred miles of Red river.

As is well known, the lower part of Red river was explored by the French not long after their settlement in Louisiana. Tonti tells us that the Indian nations there waged cruel war on each other. Pénicaut, early in the eighteenth century, went up Red river to the village of the Natchitoches, which he estimates as about 195 miles above the mouth of the river. This distance would place the settlement very near the site of the present Natchitoches, which is not far distant from the old French fort built by La Harpe a few years after Pénicaut's visit.

We endeavored in vain to identify the former settlement of the Tassenogoula,

or Nation[1] of the Rocks, which Pénicaut says formerly dwelt with the Natchez and whose customs and religion were the same as those of the people of that tribe. Pénicaut places this village as six leagues above Saline river,[2] at the base of a chain of hills extending north and south. Hills of this description are now about ten miles farther up Red river than according to Pénicaut's account. However, it should be borne in mind that the course of the river is continually changing, and that Pénicaut, though he made a close estimate as to the location of Natchitoches, was not in a position to give distances with any degree of certainty. Careful inquiries made by us near the base of these hills were without result.

Throughout the Red river region in Louisiana, one hears almost nothing of the finding of bones or of artifacts, and we know it requires but few discoveries to start considerable talk. But little seems to have been placed in such mounds as there are in that region, and presumably fields containing cemeteries, when on high ground, have been denuded of the soil in which the burials were by the action of rain on earth loosened by the plow, and when on lowlands they have been washed bare by the river or covered by deposits from it in periods of high water. The waters of Red river in flood time are charged with mud to a degree beyond any we have seen elsewhere. Our Captain Raybon informs us that after the flood of 1908 he saw six inches of deposit on the floor of a building there; and the bottom lands have been exposed to many floods.

Along Red river in Arkansas conditions in the main are different. Stories of the discovery of Indian objects—especially pottery—and mounds containing burials, some of them richly endowed with artifacts, are fairly abundant. Indeed, we know of no other region in all our fields of investigation where the proportion of deposits with the dead was so great. In the middle Mississippi region (which lies to the northward of the Red river region investigated by us), where the lavish use of pottery with burials has been so often described, the investigator has reached the maximum when a cemetery yields an average of two or three vessels to a burial. Assuredly many burials there have more than three vessels, but many others, on the other hand, have nothing. Along Red river in Arkansas, to come upon a burial unaccompanied by artifacts is indeed a rare occurrence.

One is impressed in that region, however, with the few burials in the mounds,—we found no cemeteries there, as the reader may perceive,—and we believe it likely that the mounds contain the burials of persons of note and that the cemeteries filled with burials of the commoner people have gone in the same manner as, presumably, aboriginal cemeteries disappeared in the Red river region of Louisiana. This would account for the small number of burials found in the Red river region

[1] Pénicaut speaks of another "nation" of Indians which numbered only about two hundred men, so it is hardly likely that the Tassenogoula were very numerous. "*Ils avoient avec eux une nation sauvage de leurs amis, d'environ deux cents hommes, sans leurs femmes et enfans.*"—Pierre Margry. "*Découvertes,*" etc., Part 5, p. 498.

As to the name Tassenogoula see John R. Swanton, "Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico."—Bulletin 43, Bur. Am. Ethn., p. 24 *et seq.*

[2] There is also a river of this name in Arkansas.

of Arkansas in proportion to the number of aboriginal sites encountered there, and would explain the unusually great deposits of artifacts associated with the dead.

So little pottery was found by us in the Red river region in Louisiana that it would be unwise to draw conclusions.

The aboriginal pottery of that part of Arkansas through which Red river runs (the extreme southwestern portion) is interesting, as is, in fact, that of much of the entire State.

The Red river pottery of Arkansas as a rule is tempered with fine gravel or sand, or with small bits of pottery, though kitchen vessels there often are shell-tempered. The ware, as a rule, is thin and carefully modeled; even vessels designed for culinary purposes are symmetrical, as a general rule.

The aboriginal potters along Red river in Arkansas evolved but few unusual shapes; grotesque forms or life-forms (except a few bowls with rude birds' heads projecting vertically and conventional tails extending outward) were not attempted by the potters of the region, who perhaps considered such forms incompatible with their ideas of art.

Many vessels from some of the sites of the Red river, Arkansas, region bear a high polish, and nearly all have incised or trailed decoration, though the designs vary but little. Circles, often series of concentric circles (probably sun-symbols), form a frequently-recurring design.

Pigment on the pottery of this region was commonly employed in one manner only, namely, incised decoration filled in with red (oxide of iron) or with white (kaolin); and this was done very freely. A few vessels have scrolls in red on a background of the ware, and some of the pottery has a uniform coating of red, sometimes in connection with incised decoration, but this application of the pigment lacked care or skill, and vessels thus decorated generally present a shabby appearance. Decoration in polychrome was very exceptional.

Incidentally it is interesting to note that the pottery of that part of southwestern Arkansas investigated by us differs in many respects from the earthenware of the St. Francis Valley and from the sites in northeastern Arkansas, near Mississippi river, as might be expected to be the case, since the northernmore territory lies in the Middle Mississippi region, while the more southerly region probably may be included in the Lower Mississippi province.[1]

In the region to the north we find earthenware modeled with grotesque figures and life-forms, decoration in polychrome, and comparatively infrequent occurrence of polished surface on the ware and of line decoration of merit. Besides, there are in northeastern Arkansas great numbers of vessels of coarse, thick ware, "lop-sided" (for asymmetrical is too mild a term to use in connection with them), and practically without decoration. All this is materially different from the character of the ware of the Red river region of the State, where more attention generally

[1] C. B. Moore, "Some Aboriginal Sites on Mississippi River," p. 370 *et seq.* Journ. Acad. Nat. Sci. of Phila., Vol. XIV.

was devoted to the ceramic art—even some cooking vessels there showing careful modeling and profuse decoration, as will be seen later in this report.

A really remarkable feature—indeed we may call it a unique one—in connection with some of the mounds of the Red river, Arkansas, region, is the great depth to which aboriginal grave-pits were carried, one reaching a maximum of 15.5 feet. Burials are often found elsewhere at considerable depths in mounds, but in these cases the mounds have been built up above them, and when deep graves are found in dwelling-sites much of the depth is due to the accretion of material above the original surface of the grave. But in this southwestern Arkansas region grave-pits of great depth were dug (as for instance in the remarkable mound on the Haley Place), and undoubtedly with aboriginal appliances, since not in a single site in this section was any object found indicating contact with white people.

In our season's work along Red river thirteen skulls and some other skeletal remains were found in a condition to preserve—some in Louisiana, some in Arkansas. These skeletal remains have been sent as a gift to the United States National Museum, and Dr. Aleš Hrdlička, in charge of the Division of Physical Anthropology of the Museum, kindly has prepared a paper on the most interesting of these remains, which will be found at the close of this report.

All important objects found in our season's work are displayed at the Academy of Natural Sciences of Philadelphia.

Much of the pottery found was badly broken, but the more interesting pieces have been cemented together, sometimes with slight restoration. When such restoration has been made, however, it has been done with a material differing in shade from that of the ware, so that no confusion as to original parts may arise.

All measurements given in this report are approximate, and all reductions in size in the illustrations are linear.

Dr. M. G. Miller this season, as in all our previous archæological investigations, accompanied the expedition as anatomist and has lent assistance in putting this report through the press, as he has done in the case of all our previous reports.

Mr. S. G. Weir, as assistant, and Capt. J. S. Raybon, commander of our steamer, aided the expedition in various ways.

The thanks of the Academy are tendered Prof. F. A. Lucas for identification of bones of lower animals; Dr. H. A. Pilsbry and Mr. E. G. Vanatta for determination of shells; Mr. F. J. Keeley for identification[1] of minerals and of rocks; Dr. H. F. Keller for chemical determinations; Miss H. N. Wardle for suggestions, and aid with the index; and Mr. F. W. Hodge for literary revision of the report.

The Academy also wishes to express its warmest thanks to owners of properties along Red river who, in the most courteous way, placed them at the disposal of the Academy for investigation, and who otherwise rendered the expedition every assistance that lay in their power.

[1] As sections from the specimens could not be furnished, Mr. Keeley was limited to the surface appearance for his determinations.

SITES INVESTIGATED.

(In order[1] from the mouth of the river upward.)

Keller Place, Pointe Coupée Parish,[2] Louisiana.
Near mouth of L'Eau Noire Bayou, Avoyelles Parish, La.
Lower mound on Saline Point, Avoyelles Parish, La.
Upper mound on Saline Point, Avoyelles Parish, La.
Near Norman Landing, Avoyelles Parish, La.
Johnson Place, Avoyelles Parish, La.
Mayer Place, Avoyelles Parish, La.
Moncla, Avoyelles Parish, La.
Laborde Place, Avoyelles Parish, La.
Rodriguez Place, Rapides Parish, La.
Lacroix Place, Rapides Parish, La.
Near Colfax, Grant Parish, La.
Near Boggy Bayou, Grant Parish, La.
Dunn Place, Grant Parish, La.
Near Briar Bend Landing, Red River Parish, La.
Gahagan, Red River Parish, La.
Near Taylortown, Bossier Parish, La.
Sunny Point, Bossier Parish, La.
Near Pickett Landing, Caddo Parish, La.
Cedar Bluff Plantation, Caddo Parish, La.
Thompson Place, Caddo Parish, La.
Near Byram Ferry, Bossier Parish, La.
Near Hightower Landing, Lafayette County, Arkansas.
Near Diggs Bluff Landing, Miller County, Ark.
Near Sulphur River, Miller County, Ark.
Haley Place, Miller County, Ark.
Near Red Lake, Lafayette County, Ark.
Williams Place, Lafayette County, Ark.
Egypt Place, Lafayette County, Ark.
Battle Place, Lafayette County, Ark.
McClure Place, Miller County, Ark.
Haynes Place, Lafayette County, Ark.
Friday Place, Lafayette County, Ark.
Moore Place, Lafayette County, Ark.
Foster Place, Lafayette County, Ark.

[1] Although the sites are given in order going up-river, they were not all investigated in this order, some having been visited as we ascended the river when the water happened to be low, while others were dug into on our way down when the stream was in flood.

[2] That division of the commonwealth known as "county" in all other states of the Union is called "parish" in Louisiana.

Near Dooley Ferry, Hempstead County, Ark.
Crenshaw Place, Miller County, Ark.
Daniels Place, Hempstead County, Ark.
Jones Place, Hempstead County, Ark.
Near Jones Place, Hempstead County, Ark.
Moore Place, Miller County, Ark.
Summerhill Place, Bowie County, Texas.
Moores Place, Bowie County, Texas.
Sanders Place, Bowie County, Texas.

Mound on the Keller Place, Pointe Coupée Parish, Louisiana.

The Keller Place, on Old river (see map), is the property of Mr. George Keller, of New Orleans.

About one-half mile in a southeasterly direction from Keller Place Landing, in a field long under cultivation, is a mound 9 feet 8 inches in height and 109 feet by 86 feet in basal diameters, the summit-plateau being 43 feet by 36 feet. The mound probably had been oblong at one time, and fairly symmetrical, but trampling of cattle, which we were informed sometimes herded there, and wash of rain, no doubt have contributed to give the mound its present somewhat irregular appearance.

There was evidence on the summit-plateau of some digging previous to our coming, which, however, seemed to have been desultory in character.

Trial-holes in the summit-plateau almost at once came upon burials. Two and one-half days, with eight men to dig, were devoted to a partial investigation of the mound, which proved more arduous than is usually the case with similar mounds, owing to the heat and drought which had made so hard the clayey material of which the mound was composed that the pick and grubbing-hoe were constantly called into requisition.

As it seemed probable that this mound had been a domiciliary one, and that burials were superficial and that graves had been dug only from the summit-plateau or from it and its immediate neighborhood, diggers were placed around the slope 10 feet down from the plateau, and much of that part of the slope included was dug through at a depth of from 2 to 3 feet. Also somewhat more than one-third of the plateau was dug and picked away to a depth greater than 3 feet, and deeper when graves required it.

Burials were numerous, and nearly all encountered in the course of the digging we have described seemingly had been put down from the surface, though the pits could not be traced to the present level of the plateau, owing to the presence of a superficial layer of earth about one foot in thickness, which probably had been trampled by cattle above and mingled by roots below until all outlines of pits had disappeared from it.

Up to the under surface of this layer, however, most of the grave-pits easily

were traceable, though several of the deeper graves (one 52 inches in depth) seemed for part of their depth to be beneath unbroken strata.

In order to determine the nature of the mound, therefore, an excavation 5 feet by 9 feet, approximately, was sunk from the summit-plateau to a depth of 9 feet, when undisturbed soil of a sandy character was reached.

In this excavation eleven burials were encountered, the deepest 8 feet below the surface; most of them were plainly in graves, none of which reached the surface, but were covered at different depths from the surface by unbroken layers.

Presumably this mound had been domiciliary in character, but occupied at different levels, from which burials were put down.

Fire-places were abundant throughout.

In all, fifty-seven burials were noted, omitting from the count, however, many scattered bones, mainly fragmentary.

Burials were as follows:

Extended on the back, 9
Closely flexed on the right side, 6
Closely flexed on the left side, 3
Partly flexed on the right side, 6
Partly flexed on the left side, 5
Extended on the back to the knees, the legs flexed against the thighs, 1
Single skulls, 2
Disturbances, aboriginal and recent, 7
Child, 1
Bunched burials, 17

Of the thirty-one burials of individual skeletons, the heads of which were in various directions, twenty-nine were of adults; one, of an adolescent; and one, of a child. The comparative absence of children's skeletons, which are found so numerously in some aboriginal places of burial, can be accounted for, perhaps, by disappearance through decay, the condition of the bones from this mound being such that no skulls and few other bones approached a condition to enable preservation. Curiously enough, it may be noted parenthetically, some of the bones from the lower part of the mound were in a less advanced state of decay than were many from the upper part.

The seventeen bunched burials had with them skulls as follows:

With one skull, 3
With two skulls, 7
With three skulls, 1
With five skulls, 1
With seven skulls, 1
With eight skulls, 2
With twenty-eight skulls, 1

A bunched burial extending under the base of the mound had one skull, so far as investigated.

No skulls or other bones having belonged to children were noted among the bunched burials, probably owing to the crushed condition of the bunches and to the state of decay already described.

Burial No. 30, a bunched burial with twenty-eight skulls, extended for a considerable distance into the mound and lay in a pit about 3 feet in depth and an equal distance in width. At its maximum (it tapered considerably toward the extremities) the burial consisted of skulls and various other bones (the long-bones placed parallel longitudinally) to a depth of 1.5 foot along the bottom of the trench. In the earth above this mass numerous single bones were scattered in all directions.

It has seldom been our fortune to investigate a mound in which remains of the dead were accompanied by so few artifacts.

Burial No. 1, a bunched burial, had an interesting little arrowhead of flint, of most unusual shape (Fig. 1), unfortunately with a part missing.

FIG. 1.—Arrowhead of flint. Keller Place, La. (Full size.)

Burial No. 14, which lay closely flexed on the right side, had a biconcave, discoidal stone of sandstone, 2.3 inches in diameter.

Burial No. 18, a skull, perhaps all that was left of a disturbance, had on one side two flint pebbles and on the other side a spherical pebble about the size of a child's fist—perhaps a hammer-stone, though no abrasions are present upon it.

Burial No. 30, the large bunched burial already described, had a mass of red oxide of iron, doubtless pigment.

Burial No. 41, a skeleton partly flexed on the right side, had at the neck a tooth of an alligator. No midden refuse lay near this burial to account for the presence of the tooth in a way other than its former use as an ornament. The proximal part of the tooth, in which a perforation for suspension would be, is absent through decay.

Apart from human remains there came from the mound: four barbed arrowheads of flint, of medium size, found together; two diminutive arrowheads, also barbed, lying apart; two flat pebbles and various scattered fragments of earthenware. These sherds, found singly, and presumably introduced by accident in the making of the mound, were, as a rule, of fair quality, hard, and tempered with small fragments of pottery. None showed any trace of color and nearly all were without decoration of any kind. One small fragment of excellent ware, however, showed more ambitious effort than did the rest, the margin of the vessel to which it belonged having been decorated with small, angular projections bearing short, trailed lines.

Careful inspection and a small amount of digging to test the composition of the soil failed to disclose any sign of an aboriginal cemetery in the vicinity of the mound.

Mounds near the Mouth of L'Eau Noire Bayou, Avoyelles Parish, La.

About one mile westerly from the mouth of L'Eau Noire Bayou, which is now crossed by the levee, in woods, is a mound mainly on property of Mr. C. P. Voisel, of Marksville, La., but in part on land belonging to Mr. William T. Guillot, living nearby. These gentlemen joined in cordial consent to our investigation.

The mound, about square, the sides facing the cardinal points of the compass, has a basal diameter of about 165 feet; that of the summit-plateau is 82 feet.

The height of the mound, determined from the southern side, where the ground is level, is 8 feet. The northern side is on the crest of sloping ground which gives the mound an appearance of added height.

Trial-holes almost at once came upon many burials. Continued investigation indicated that much of the summit-plateau centrally had been used for burial to a considerable extent to about 3 feet below the surface. The soil contained quantities of scattered human bones, whole and fragmentary, while burials, and parts of burials, left where other interments had cut through, were numerous. In fact the area in question to the depth we have named, seemed to have been dug and redug in the making of graves until almost all trace of individual pits had been obliterated. The soil was much darker in this area than it was found to be superficially in that part of the plateau that bordered its margin, or than was the light-colored alluvial material that underlay the superficial 3 feet of the plateau.

A very limited number of burials were found in the outer parts of the plateau, but it was evident that this space had not been used for burial purposes to any extent.

In order to ascertain the nature of the mound, an excavation 6 feet by 8 feet and 8 feet in depth was made centrally in the plateau, proving, as at the Keller Place, to be a somewhat difficult task, as the lower 5 feet of the mound could be removed only with the aid of a pick.

In the upper 3 feet of this excavation burials were numerous, as might have been expected from the results obtained by the trial-holes. There were found also, however, three burials, each about 4 feet 5 inches from the surface, all beneath an unbroken layer which commenced about 3.5 feet down. One of these burials lay in a small but clearly distinguishable pit which extended down about one foot below the bottom of the stratum in question.

Still another burial was encountered 5 feet 8 inches from the surface. Below this depth no bones were met.

It does not seem likely that this mound was constructed for burial purposes. It is on land subject to overflow, and one of the owners of the mound informed us that he had seen the water almost reach the level of the summit-plateau. Presumably a domiciliary mound of insufficient height was occupied for a time and buried in superficially to a limited extent, and was then increased in height, and graves were dug from the surface, as was sometimes done in the case of domiciliary mounds.

The condition of the bones in this mound was such that but few could have been saved even under favorable circumstances. As it was, all bones lying in the dry part of the mound were subject to breakage on removal. Nevertheless, two crania, one without the lower jaw, were saved in good condition.

Dr. Aleš Hrdlička refers to these skulls in connection with his description of the crania from the remarkable mound on the Haley Place, Arkansas, which is given at the close of this report.

Thirty-nine burials were noted by us in this mound, no account having been taken of the great quantity of scattered bones to which reference has been made, or of a few burials that were not entirely removed from the hard material in which they lay. Presumably but a small proportion of the burials in the mound came under our observation.

The burials recovered by us were as follows:

Adults extended[1] on the back, 18[2]

Children, 6

Aboriginal disturbances, 5

Bunched burials, 10

Of the bunched burials, one had a single skull; one had two skulls; four had five skulls; one, six skulls; one, seven skulls; one, eight skulls; one, eleven skulls.

One bunched burial with five skulls included one of a child; and two bunched burials, one with five skulls and one with six skulls, had each two crania belonging to children.

If the aborigines who dwelt on and buried in this mound habitually placed tributes with the dead, most of the mortuary offerings must have been of a perishable character.

Burial No. 2, that of a child, had at the skull what remained of a mussel-shell; and a large mussel-shell, broken when found, was with burial No. 6, a bunched burial.

Burial No. 9, an extended skeleton, had single mussel-shells in fragments at the right of the skull and at the right wrist. As mussel-shells (*Unio*) were not encountered apart from burials in this mound, it is likely their placing with the dead was intentional.

Burial No. 14, a skeleton at full length, had at the left side of the skull an earthenware vessel, badly broken and with parts of the rim missing. This vessel, a bottle of rather unusual shape (Fig. 2), has an incised design shown in the illustration. There has been some restoration of the neck of the vessel, which the presence of a part of the neck with rim fully justifies. The ware of this bottle is gray, and apparently has undergone imperfect firing, which seems to be characteristic of much of the ware of the lower part of Red river in Louisiana.

[1] One had the left ankle crossing the right one.
[2] Some skeletons, badly decayed, may have belonged to adolescents.

Burial No. 15, extended on the back, had a small group of pebbles at each ankle, doubtless having belonged to rattles.

Burial No. 31, a full-length skeleton, had a mass of red oxide of iron, prepared for use as pigment, beneath the right shoulder.

Burial No. 37 had a badly broken vessel over the right humerus.

FIG. 2.—Vessel No. 1. L'Eau Noire Bayou, La. (Height 8.8 inches.)

No other burials at this place were found with artifacts in association.

Apart from human remains, though no doubt with them at one time, were found separately: a pebble of attenuated pear-shape, 2 inches in length, grooved at one end for suspension; and a barbed arrowhead of flint.

Not immediately with bones, but near many scattered bone fragments, lay fragments of parts of several vessels. One of these, of which about two-thirds were present, had been a large bottle of soft, gray ware. The decoration, faintly incised,

consists of four similar designs, each separated by a vertical line in a blank field. Each design is made up of incised lines forming a cross within a circle, which circle is surrounded by another one, concentric, having radiating from its circumference triangles filled in with reticulate lines, save in one instance where on one side space was wanting. Similar triangles project toward the circles from vertical lines which enclose the spaces, and there are also similar angles with apices turned toward the neck of the bottle, having as bases a circle surrounding the neck.

Some of the earthenware from this mound is tempered with small fragments of pottery, some with a mixture of minute pebbles and bits of broken stone. A few sherds showing the use of red pigment for decoration were present in the soil, one fragment having additional decoration in the form of broad, incised lines.

About seventy-five yards in a northerly direction from the mound just described, on property belonging to Mr. C. P. Voisel, is another mound, slightly more than 10 feet in height. Its outline is somewhat irregular, but presumably at one time the mound was square, or nearly so, as basal measurements were 114 feet by 122 feet, which are fairly approximate considering the difficulty of determining just where the base of a mound begins.

As the summit-plateau of this mound had been used for burials in recent times, and as cutting into the sides of the mound would not have been justifiable in an area subject to overflow, no investigation of this mound was attempted.

A short distance from these two mounds are the remnants of a low, flat mound, most of which had been removed in the construction of the levee. It is currently reported that quantities of human bones and much fragmentary pottery were removed with the material throughout the work, and, in point of fact, inspection showed numerous bits of human bones, and many fragments of pottery, most of which, however, were without decoration.

Lower Mound on Saline Point, Avoyelles Parish, La.

On Saline Point, in full view from the residence of Mr. Landry Norman, on whose property it is situated, is a mound in sight from the river bank. This mound, of circular basal outline, with a diameter of 73 feet, is about 11 feet in height.

The mound was deeply furrowed by wash of rain, and in addition had been dug into centrally to a considerable extent previous to our coming.

As the property of Mr. Norman is subject to overflow in times of unusally high water, when the mound becomes a place of refuge, its destruction was not considered.

In material thrown out by previous digging we found a small earthenware pipe of the "monitor" class, having one end missing.

Eight trial-holes in the upper part of the mound came at once upon raw, yellow clay, dried hard and containing no indication of previous burials therein. It seemed likely that the superficial parts of the mound, probably loosened by tramp-

ling of cattle, had been washed away by rain and that burials near the surface went at the same time.

A more thorough examination of this mound, while desirable, is, under the circumstances, out of the question.

Upper Mound on Saline Point, Avoyelles Parish, La.

The property of Mr. L. M. Clavrie is on Saline Point, bordering the river, but somewhat farther up than Mr. Norman's place.

About 300 yards back of Mr. Clavrie's residence is a mound in woods, which has been considerably worn and washed. Its original shape is not apparent; possibly at one time it was square or nearly so. Its present basal diameter is 88 feet, about one-third of which is the diameter of the summit-plateau. The height of the mound is slightly more than 10 feet.

Many trial-holes over the surface of this mound showed that many burials had been made in much of the summit-plateau and, in places, partway down the slope. The deepest burial discovered was at a depth of 3.5 feet from the surface.

In the course of about two days' work seventeen burials were come upon, as follows:

Burial No. 1. This burial, which was just below the surface, consisted of a number of bones bunched together, including a single skull.

Burial No. 2, also superficial, was a bunched burial, having nine skulls in connection with it. Near one of the skulls were two vessels, one in fragments, and two flint pebbles together with a much-decayed canine tooth of a large carnivore, without perforation or groove for suspension. With other parts of this burial were two small vessels together, and near these a diminutive pot. Probably a child's remains had been included with this bunched burial, but if so, its bones had decayed away.

Burial No. 3. This burial was made up of more than one individual, burnt to small fragments. Several bits of pottery lay with the calcined remains. Du Pratz[1] says that no nation of Louisiana practised cremation. It is very unlikely that the customs of the Louisiana Indians had changed in Du Pratz's time. This writer, careful as a rule, was hardly in a position to formulate a general negative in connection with so large a territory.

Burial No. 4. This burial, another cremation, also included remains of two or more skeletons, as parts of two different skulls were determined in it.

Burial No. 5. A bunched burial including two skulls, one of which had been deposited upon some fragments of pottery placed together.

Burial No. 6. Cremated remains of several individuals. This burial differed in one respect from other cremations present in the mound, for while the others had been carefully gathered and deposited without any other material showing

[1] "Histoire de la Louisiane," Vol. III, p. 24, Paris, 1758.

trace of fire, there were with this one masses of burnt clay, some larger than a man's fist, and also wasps' nests of clay hardened by fire, including two nests on the bases of which are distinct imprints of matting. It is probable that these wasps' nests originally had been on a wigwam burnt when the remains were cremated.

In the middle of this deposit of cremated bones was a vessel into which material from the deposit had fallen.

Burial No. 7. A bunched burial with one skull.

Burial No. 8 consisted of the skull of a child, in fragments (as were all skulls recovered by us from this mound), also two femurs and one tibia, of adult growth. With this curious mixture were a pot and part of another vessel; also a quantity of pigment—powdered red oxide of iron.

Burial No. 9 was a bunched burial of bones so badly decayed that but little about them could be determined.

Burial No. 10, a bunched burial with which no skull was noted.

Burial No. 11, a skeleton of an adult, lying partly flexed on the right side.

Burial No. 12. A bunched burial with two skulls.

Burial No. 13, a bunched burial with which were seven skulls. With this burial were numerous fragments of a vessel, widely scattered as if broken ceremonially and thrown with the remains.

Burial No. 14, a few scattered fragments of calcined bone, perhaps the result of aboriginal disturbance. With this burial, however, was a bowl containing a circular pebble, perhaps a smoothing stone.

Burial No. 15. This burial consisted of a small deposit of cremated remains with which were a few fragments of unburnt bones.

Burial No. 16 lay at a depth of 3.5 feet, and consisted of only traces of decaying bones with which were two vessels of earthenware, both badly broken.

Burial No. 17. A deposit of finely-burnt fragments, presumably of a single skeleton, perhaps that of a child. With this deposit were three vessels,—a pot and two bowls.

Fourteen vessels, some very badly broken, came from this mound, all but one lying in association with burials. These vessels, pots and bowls (the bottle not being represented) bore in the majority of cases incised decoration of an unambitious kind. None was decorated with pigment, though sherds on which was a uniform coloring of red came from the mound. The tempering of some of the vessels consisted of small fragments of stone. We shall now describe in detail certain vessels from this mound.

Vessel No. 2. A rude pot, of very inferior ware, having on part of its surface a crude decoration made up of circles and diagonal lines. Height 4.75 inches.

Vessel No. 4 borders on the wide-necked bottle in form. The ware is soft, and the decoration, having in the main the scroll as a motive, is scanty and poorly executed (Fig. 3).

Vessel No. 7. A pot of inferior, yellow ware, having incised designs four times shown, each somewhat resembling the leg-symbol found farther eastward along the Gulf (Fig. 4). This vessel, otherwise uninteresting, has one feature worthy of remark. In the center of the base is a hole about .25 inch in diameter, which is not an accidental break or made by vegetable growth in the mound, but a perforation made previous to the firing of the pot, as is shown by bulging of the ware around the hole in the interior of the vessel. We have here a ceremonial vessel with a perforation made to "kill" the pot in order to free its soul to accompany that of its owner to the spirit land, a custom practised chiefly by the aborigines of Florida.

Fig. 3.—Vessel No. 4. Saline Point, La. (Height 3.1 inches.)

Vessel No. 8. A diminutive vase, half-fired, bearing rudely-incised decoration and evidently made as a toy for a child.

Fig. 4.—Vessel No. 7. Saline Point, La. (Height 4.5 inches.)

Vessel No. 9. A bowl (Fig. 5) of fairly well-fired ware, though the surface is lacking in smoothness. The decoration of the vessel, a scroll combination, presents no novelty in the way of design, but in its execution the bowl greatly excels the pottery of Red river, found by us, south of Gahagan, Louisiana, which is a long distance farther up.

Incidentally it may be noted that the beautifully-decorated earthenware found on Ouachita river, La., is encountered north of the town of Monroe, which is about on a line with Shreveport on Red river. Shreveport is about forty miles by land above Gahagan.

Vessel No. 11. This pot, of soft yellow ware (Fig. 6), has a design four times shown. This design, which closely resembles one found on a vessel from a mound on the Mayer Place, to be described shortly in this report, seems to be made up of two serpents with additions or possibly of long-necked birds having a body in common. We are inclined, however, to the belief that serpents are intended to be represented, as the figures resemble those on a vessel[1] from Sunflower river, Miss., in which the body of the snake is isolated and without addition.

[1] "Certain Mounds of Arkansas and of Mississippi," p. 587, Fig. 4. Journ. Acad. Nat. Sci. of Phila., Vol. XIII.

FIG. 5.—Vessel No. 9. Saline Point, La. (Diam. 6 inches.)

FIG. 6.—Vessel No. 11. Saline Point, La. (About full size.)

Vessel No. 13. A very rude, scaphoid vase, parts of which only were present in the mound. Body and flat base are covered with rude, trailed designs.

Vessel No. 14. A bowl (Fig. 7) of half-fired ware, having a decoration made up of four designs of incised and punctate markings, each somewhat resembling an arrowhead in shape.

A rude knife of chert was found apart from the burials.

If an aboriginal cemetery was near this mound its discovery would be difficult, as the territory is subject to overflow and in places is covered by a deposit from the river.

At this place we were given by Mr. Louis Neck, whose place adjoins that of Mr. Clavrie, a pendant or charm-stone, of hematite, 3.5 inches in length, having the shape of an elongated pear, and grooved near one end for suspension. This

FIG. 7.—Vessel No. 14. Saline Point, La. (Diam. 3.6 inches.)

object, Mr. Neck informed us, had been ploughed up on a property belonging to him, near the town of Marksville, Avoyelles Parish, about eight miles distant.

Mounds near Norman Landing, Avoyelles Parish, La.

About three-quarters of a mile SE. by S. from Norman Landing, on property of Mr. F. Saucier, living in the nearby settlement, is a symmetrical mound with circular base, the diameter of which is 150 feet, and that of the summit-plateau 20 feet. The height, determined from what seemed to be the general level, measured slightly less than 20 feet, though when the mound is regarded from neighboring depressions whence, no doubt, material for its building was taken, the height seems considerably greater.

A number of trial-holes showed the upper parts of the mound to be of a material composed largely of yellow clay and having no admixture of organic matter.

The shape of this mound indicates that perhaps it was built for a purpose other than a domiciliary one, but the size of the mound precluded an investigation without material injury.

In a field, above reach of the river, is what long cultivation has left of a small mound containing burials. Investigation showed the material of which it was composed to have the dark shade one looks for where organic matter is mixed with the soil.

About one foot below the surface remnants of a human skull were found, and in another place were decaying fragments of human bones and a human incisor.

The height of this remnant of a mound, which was about 200 yards SSW. from the large one, was 4 feet; its present diameter, 45 feet. Evidently the superficial parts, in which probably most of the burials were, had been plowed away. Mr. Saucier informed us that much broken pottery had been uncovered in cultivating the mound in time gone by.

In the surrounding field some digging was done by us without coming on burials, though a drill of flint was unearthed.

In the opening part of this report we refer to Pénicaut's statement that the Tassenogoula, or "Nation of the Rocks," was, at the time of his visit, six leagues above Saline river, on the banks of a small stream at the base of a chain of hills extending north and south. Hills running as described are some miles farther up Red river, but at this place, where, by the way, a bayou enters the river, there is high, flat land running back in a southeasterly direction.

Cemetery on the Johnson Place, Avoyelles Parish, La.

The Johnson Place, belonging to Mr. Richard J. Johnson, who lives upon it, is in part above the reach of high water. A portion of this high ground is a field two acres in extent, one-quarter of a mile from the river, approximately. This field is much darker as to color of soil than are adjacent fields, though pasture land also adjoining it is said to consist of the same black soil, and to have formed part of the aboriginal dwelling-site. However, as the field was covered with grass, the fact was not evident on inspection, though it is said to have been apparent when the pasture land was under cultivation, some time ago.

Over the cultivated part of this site are scattered numbers of fragments of pottery, flint chips, and other debris.

A part of the field, slightly higher than the rest and about 100 feet by 75 feet, roughly speaking, had on its surface, in addition to the other debris, almost innumerable fragments of mussel-shells, while bits of human bones and even parts of skeletons together could be seen there at the time of our visit.

A small collection of arrowpoints, some neatly serrated, were collected by us from this and from other parts of the field.

In the restricted area in question and near it, fifteen trial-holes came upon human remains in seven places, two of which only were worked out, it being impossible, under any circumstances, to obtain an accurate idea of what the site had been, as it had suffered so greatly from long cultivation and from wash of rain.

The black soil was found to be about 5 inches in depth, when undisturbed, yellow clay was reached. Burials had been made in pits extending into the clay, the distance from the surface at which they were found probably conveying but little idea of their original depth.

FIG. 8.—Vessel of earthenware. Johnson Place, La. (Diam. 5.6 inches.)

The first pit investigated was about 10 feet by 7 feet, and 30 inches deep. It contained five skeletons,—four of adults, one of an adolescent,—all extended on the back and all heading W. by S., or rather the heads of all had been directed in that way. The skull of one burial was missing. Three of these skeletons lay directly on the bottom of the grave, near together, while two lay almost immediately above them.

At the right of the skull of one of the adult skeletons was a pebble. Also near the skull was a bowl in fragments, and of somewhat better ware than is the average from this region, but inferior to much found farther up Red river. This vessel has a trailed decoration, as shown in Fig. 8.

There was also in this pit part of a skeleton in order, the remainder of which had been disturbed or had not held together when the burial was transferred from

the bone-house. With the skull of this burial was a pebble, and at the neck were three beads, each about one inch in length, made from sections of the columella of a conch (*Fulgur*).

The remainder of the pit was filled with a great quantity of bones in complete disorder, including fifty-one skulls, four having belonged to children. With these bones were: a spherical, shell bead about one-half inch in diameter; two mussel-shells together, each with a small perforation near the hinge; a celt of quartzite, somewhat less than 2 inches in length.

The second pit was 10 feet in length. One end was 5 feet across; the other, which was somewhat curved, was 3 feet 6 inches. The depth of this grave was 22 inches. In this grave were four skeletons of adults, each extended on the back, having the heads directed WSW. Two of these skeletons lay on the bottom of the grave, while the remaining two were almost immediately above them.

One of the skeletons had, near the skull, together, a bit of flint, and two celts of quartzite, each a trifle less than 2 inches in length.

There were in this grave also three parts of skeletons and a great quantity of disconnected bones, including thirty-seven skulls and a fragment of the skull of an infant. With the disconnected bones were occasional pebbles, and a discoidal stone 2.5 inches in diameter, rudely made from a stone naturally flat.

Four crania were saved from this place.

Mound on the Mayer Place, Avoyelles Parish, La.

In woods and dense underbrush on property of Mrs. G. L. Mayer, of Marksville, La., is a mound about one mile SW. from the landing on the adjacent John-

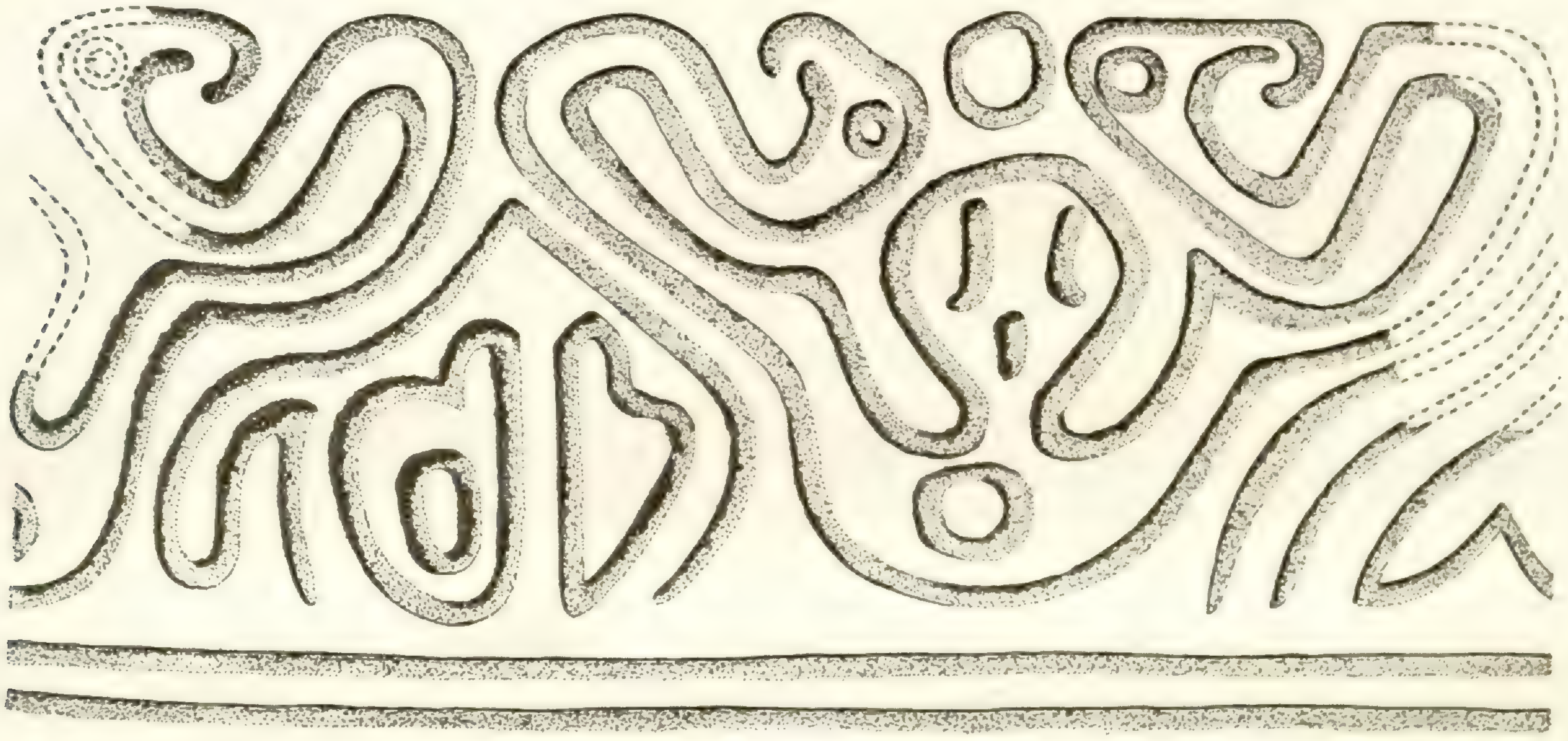

Fig. 9.—Vessel of earthenware. Decoration. Mayer Place, La. (Three-quarters size.)

son Place. The mound is about circular in outline of base, is 40 feet in diameter and 2.5 feet in height, measured from the outside.

Eight trial-holes showed the mound to be a mixture of sand and clay. There seemed to be no definite base-line marking the original surface of the ground, undisturbed clay lying beneath the material of which the mound was composed, though this material extended down considerably deeper than was indicated by the exterior measurements of the height of the mound.

No pits of any kind were noted, nor was any trace of human bones found, though one hole at a depth of 38 inches came upon fragments of an undecorated vessel, and a boat-stone, rudely made from a pebble, having a concavity at the base but no perforations.

About half a foot below these objects was a broken vessel of very soft, porous, yellow ware, with a design (Fig. 9) twice shown, somewhat resembling one described as coming from the upper mound on Saline Point (page 498). Presumably a serpent is represented.

In another hole, about 3.5 feet from the surface, were two undecorated vessels, badly crushed.

Presumably burials formerly present in this mound had disappeared through decay.

Mound at Moncla, Avoyelles Parish, La.

Moncla is a settlement on the bank of Red river.

In view from the water, in a cultivated field, on prairie land said to be above the reach of high water, is a mound with sides too steep to permit the use of the plow. A hole in the summit, dug previous to our visit, showed the upper part of the mound, at least, to be composed of raw, yellow clay.

The mound, circular in outline of base, slightly more than 10 feet in height, has a diameter of 80 feet. The summit-plateau, at the time of our visit, was 17 feet in diameter, but deep furrows in the slope of the mound, caused by wash of rain, indicated that the plateau had been of greater extent in the past.

There is no history of any discoveries in connection with this mound, nor is any debris visible on the fields which surround it.

The owner of the mound, who was written to, and later visited, by us, required more time to reach a conclusion as to our investigation than the expedition could accord, considering the unpromising appearance of the mound and the character of the region in which it is situated.

The ridiculous idea that treasure has been buried in these mounds is widespread and sometimes acts as a deterrent to the ignorant when permission to dig is requested.

Mound on the Laborde Place, Avoyelles Parish, La.

About five miles in an easterly direction from the town of Echo is the plantation of Mr. Adolphe Laborde, who resides on it. This place is some distance in from the river, but is near a former course of the stream. On the property is a mound well known along the river for a considerable distance, and sometimes

called the Island mound, not because it is actually an island, but for the reason that it forms an apex to some elevated ground which is not covered in periods of high water.

This mound, 10 feet 6 inches in height, circular in basal outline, has a diameter of 95 feet. It has had a considerable summit-plateau, but its extent was difficult to determine owing to much digging in it in recent times, which had left a deposit of soil on its surface, and to the fact that it had been plowed.

A number of trial-holes were put down from the summit-plateau, one of which was 18 feet 6 inches by 14 feet. Parts of this hole were carried to a depth of 4 feet 6 inches and 6 feet respectively, and a smaller hole from the bottom was extended beyond the base of the mound.

Trial-holes showed that the superficial part of the summit-plateau was filled with burials. These burials, which were from 20 inches to somewhat more than 4 feet in depth, were in grave-pits, as sometimes the lower parts of the pits could be seen cutting through layers of clay which differed from the mixed material used in filling the graves, though the upper few feet of the mound had been so thoroughly mingled that the material composing it resembled that found to have been used in filling the pits. No doubt the pits had been put down from the surface. So nearly as could be determined (for sometimes intersecting graves could be differentiated owing to their bases being at different levels) thirteen graves were encountered, some of which, however, had been lessened as to their contents by other graves which had been put down through parts of them.

The form of burial, as a rule, consisted of placing layers and heaps of bones in no order whatever, though in several instances a skeleton had been interred at full length on the back and quantities of bones had been placed in the grave alongside of and on top of it.

Not needlessly to occupy space, we shall confine our account to the more interesting burials.

Burial No. 1 consisted of the skeleton of an adult extended on the back, in connection with bones including sixteen skulls, which, like all crania found at this place, were past preservation. Some of the bones with this burial showed marks of fire, the only ones so treated which were encountered by us in the mound.

FIG. 10.—Earthenware pipe. Laborde Place, La. (Full size.)

At the upper part of the right humerus of the extended burial was an undecorated pipe of earthenware (Fig. 10), made without extension for the reception of the stem. Near the outer side of the upper part of the left humerus was a bone implement in fragments.

Burial No. 2 was made up of scattered bones, including twelve crania, on one of which were stains of copper. Among these bones was an undecorated bottle of ware imperfectly fired, and elsewhere in the deposit, together, were four pebbles and a fragment of flint.

Burial No. 3 was without a complete skeleton, being made up of eleven

crania and a complement of other bones. On the bottom of the grave was red pigment.

Burial No. 4 was a skeleton at length on the back from the feet to the pelvis, where it had been cut away by another grave. A mixture of bones, having four crania, lay with this part of a burial.

Burial No. 7 was the skeleton of an adult, extended on the back, accompanied by bones including twenty crania. Near one skull was a small arrowhead of flint, and a projectile point of the same material was with other bones, as was a small quantity of red pigment (hematite). Lying transversely between the left forearm and the body was one of the most gracefully wrought celts it has been our fortune to see, the cutting edge, the body, and the rounded extremity being very symmetrical. The material is quartzite; the length, 3 inches. At the middle of the inner side of the left tibia, together, were sixteen pebbles, some about the size of the end of one's finger, some smaller.

Burial No. 8 had twenty-eight crania lying with quantities of other bones. At the verge of the deposit, somewhat separated, were four vessels of earthenware and various fragments of pottery. Two of these vessels are diminutive pots with scanty line-decoration; one is a bowl of about one quart capacity, having an attempt at a uniform coating of red on the outside (which, however, took effect in places only), and with four encircling, parallel, incised lines below the rim.

The fourth vessel is a small bowl (Fig. 11), having on the inside a fairly good

Fig. 11.—Vessel No. 4. Laborde Place, La. (Diam. 4.5 inches.)

coating of red pigment. On the outside, however, the pigment appears irregularly at places, its absence in part being due, not to wear, but to the fact that the pigment was unskilfully applied and failed to adhere. This bowl bears an incised, scroll decoration. Incidentally it may be noted that in the lower Mississippi region (south of the Arkansas river) incised decoration is often found on vessels in connection with the use of pigment. On the other hand, in the middle Mississippi region, vessels adorned with pigment practically never bear incised decoration.

The remaining burials from this mound, less noteworthy than those described, offered but one point of interest, namely, the presence of glass beads with one of them, which lay at a depth of 2.5 feet. Probably all the burials in this mound were post-Columbian.

An examination of the lower parts of the large excavation showed no pits. The smaller excavation to which reference has been made came upon a well-marked base-line at a depth of about the height of the mound as determined from the outside.

Southwest of the mound and contiguous to it is a field of considerable extent, the soil of which is dark and is literally covered with dwelling-site debris, fragments of flint, pebbles, innumerable bits of inferior pottery being scattered around, but no human bones, so far as could be determined. From this field were gathered many arrow-points of flint, all rather rudely made; two ear-plugs of earthenware, of different sizes; a large part of a shell ornament 1.1 inch in diameter, with central hole and scalloped margin, and having a perforation for suspension.

Trial-holes in this field showed the dark soil to extend about one foot to underlying clay. Possibly grave-pits were present in places, but as the field was covered with growing cotton, a full investigation was out of the question.

Mound on Rodriguez Place, Rapides Parish, La.

On the Rodriguez place, which belongs to Mr. E. S. Rodriguez, who lives upon it, about one mile south from the landing is a mound in a cultivated field. This mound, about circular in basal outline, had a diameter of 65 feet. Mr. Rodriguez informed us that the field in which the mound is, had been cleared nine years before, and pointed out the stump of a large tree near the center of the mound as marking its height at that time, but added that much had been plowed away from the mound in parts surrounding this stump, and in fact the stump and soil immediately surrounding it were considerably above all other parts of the mound. The level of the ground where the stump was, was somewhat less than 3 feet above the level of the field; much of the mound, however, did not exceed the general level by more than 1.5 to 2 feet.

On and about the mound several arrowheads of flint (one barbed and serrated on the edges of the lower half of the blade) and many fragments of flint and of pottery were found.

According to Mr. Rodriguez, bones had been plowed from the mound, and many long, red beads had been found on its surface by children living nearby. Confirming this, we found on the mound a tubular bead of red jasper, .94 inch in length; .2 inch in diameter and having a perforation bored through from one end, with a diameter of .12 inch at one end and .07 inch at the other end. This perforation, certainly a fine example of aboriginal skill, is evenly placed, though, as stated, the opening at one end is slightly wider than it is at the other.

The mound was investigated by us in a spirit of expectation which, unfortunately, was not fulfilled.

In the shallower parts of the mound trial-holes were sunk without return. Centrally in the mound was dug out a space 10 feet square, which included the removal of the stump before referred to, and resulted in the finding of a single burial under where the stump had been. This burial, that of an adult extended on the back, the head directed toward the north, lay 2 feet 7 inches from the surface, the measurement being taken to the upper parts of the skeleton. No object of any kind was in association.

Seemingly the burial lay on the original surface of the soil, or had been placed a few inches below it. Determination as to this was difficult, however, as the percolation of water into the hole where the skeleton lay greatly interfered with the work. One thing was certain: the burial had not been made in a grave dug through any part of the mound, as the light-yellow clay of which the mound was made was undisturbed above the skeleton.

Various holes dug from what seemed to be the base of the mound gave no indication of any pit or pits extending beneath it.

In parts of the mound, distant from the burial, were found: a rough arrow-head of flint; a flint drill, or possibly an arrow-head, 2.75 inches in length, and somewhat less than .5 inch in maximum width, made from a flint pebble, the original surface of which is still apparent in places.

Mound on the Lacroix Place, Rapides Parish, La.

In an open field, about four hundred yards from the landing on the Lacroix Place, of which Mr. John L. Lacroix, of Alexandria, La., is the owner, is a mound, circular in basal outline, 6 feet in height and 62 feet in diameter.

This mound, which had every appearance of having been dug into to a great extent previous to our coming (probably by seekers after treasure), is in the main made up of bright yellow clay with admixture of sand. In the central part of the mound, however, the material has a much darker appearance, and there two trial-holes came upon fragments of human bones, greatly scattered. Presumably these skeletal remains, taken out by previous diggers, had been returned in partial filling of the holes.

A number of other trial-holes put down by us were in the yellow soil to which reference has been made, and unearthed neither bone nor artifact.

On the surface of the field surrounding the mound were a few fragments of flint, but no other signs of a dwelling-site were apparent.

Mound near Colfax, Grant Parish, La.

On property belonging to Mrs. C. P. Calhoun, of Colfax, about 100 feet south from the township road running eastward from Colfax (which is about 2.5 miles distant), is a small mound on a ridge. In the body of the mound had been dug out previous to our coming, presumably by seekers after treasure, a hole 20 feet in diameter. The height of the remaining part, which evidently had been increased

by soil thrown out by the former diggers, was 5.5 feet; the diameter, probably increased in the same way, was 48 feet.

The soil of the mound is sandy clay containing masses of sandstone, some more than 2 feet in diameter.

Seven trial-holes dug into the apparently unexcavated part of the mound were unproductive, and no human remains or artifacts were noticed in the soil thrown out by previous diggers.

The area surrounding the mound gave no indication of having served previously as a place of abode.

Mound near Boggy Bayou, Grant Parish, La.

A mound on a high ridge, on property belonging to Mr. C. H. Teal, is about two miles in a direct course north of Colfax and one-quarter mile west of the township bridge over Boggy Bayou.

This mound, which had been much dug into, is at present 13 feet 7 inches in height, and is 93 feet in diameter of base. An excavation 34 feet by 21 feet, with a depth of 7.5 feet at the time of our visit, had been made into the central part of the mound before our coming, while smaller excavations had been made in the sides.

The mound is composed of coarse sand, much of it red but not artificially colored, with a few small masses of sandstone scattered through it.

In seven trial-holes nothing was found to indicate the use of the mound for burial, and no fragments of bone or artifacts were seen about the old excavation.

The surrounding ground gave no sign of the former presence of aborigines.

Dwelling-Site on Dunn Place, Grant Parish, La.

About one-half mile SSW. from Dunn Landing, in a field on a point of alluvial land, the property of Mr. R. M. Dunn, living on the plantation, is a dwelling-site about one acre in extent. The surface of the site is somewhat higher than surrounding ground, and shows soil darkened by organic matter. Fragments of pottery, shells, and animal bones are scattered about.

In forty-eight trial-holes put down by us the dwelling-site material was shown to consist of dark soil with which was mingled debris similar to that seen on the surface. The maximum depth of this dwelling-site material, as shown by the trial-holes, was 28 inches. No human remains were encountered.

In the digging, separately, were found: a small, barbed arrowhead of flint; a drill of the same material; a short, slender piercing implement of bone; an implement of bone with rounded point and having at the opposite end the articular part still remaining.

The fragments of pottery found above and below the surface on this site were

of fairly good quality, but without incised decoration. One sherd, coated with red paint on both sides, was encountered.

Mound near Briar Bend Landing, Red River Parish, La.

On a high ridge, about three-quarters of a mile east from Briar Bend Landing, in a cultivated field forming part of the plantation of Mr. J. J. Stanfill, Sr., who resides upon it, is a symmetrical, conical mound of sand, 8 feet 7 inches in height and 55 feet in diameter of base. In the summit of the mound previous diggers had made an excavation 6 feet in diameter and 4.5 feet in depth, approximately.

A central excavation 7.5 feet by 11 feet was carried by us to a depth of 12 feet 3 inches without coming upon a distinct base-line, but at a depth of 9 feet 2 inches, at the central part of the mound, the red sand composing it rested upon sand, gray-brown in color, which apparently represented the surface upon which the mound had been built. From the margin of the mound on the eastern side, a trench 9 feet in width and extending below the base was dug in to connect with the central excavation. In addition, seven trial-holes were sunk in various parts of the mound.

Although this symmetrical mound, which, judging from its measurements, must have been originally without a summit-plateau of any extent (the previous digging involved the throwing out of much material and prevented a determination at the time of our visit), had every appearance of having been built for burial purposes, yet but few burials, apparently, had been placed in the body of the mound.

In sand cast out by previous diggers were small fragments of human bones, and a skull (all that remained of a skeleton) was encountered at a depth of 4.5 feet, at the margin of the previous excavation.

Of nineteen burials found by us in place[1] the two shallowest were 6 feet in depth, and these, found where the mound sloped considerably, were not far from the base. Other burials were from 7 feet to 12 feet 3 inches in depth—a number being from 10 to 11 feet down.

In view of the fact that so large a proportion of burials found by us lay considerably below the original surface of the ground, it seemed possible that the mound had been built above a cemetery, but various trial-holes put down in the level ground around the mound failed to reveal any indication of one.

The burials, which were so badly decayed that at times it was hard to distinguish traces of them, were as follows:

Partly flexed on the right side, 1
Partly flexed on the left side, 1
Closely flexed on the right side, 8
Closely flexed on the left side, 3
Aboriginal disturbance, 1
Bones in caved sand, 1
Cremations, 4

[1] Some scattered bones fell in caved sand.

The cremations were all small deposits of calcined human bones, none of which had been burnt where found.

The comparative absence of artifacts in this mound which had so promising an appearance, was a great disappointment. With one burial was a rude arrowhead of flint; with another burial lay a flat pebble of irregular outline. Still another burial had in association a small mass of galena (lead sulphide) with a perforation countersunk at each side, for use as a bead.

In the sand thrown out by the previous digging were three pairs of copper ear-ornaments of the spool-shaped variety, some broken into two parts. Each of these ornaments is made of two cones of sheet-copper, the apices of the cones apparently connected by inserting the apex of one cone into that of the companion cone and spreading the sheet-copper on the inside to hold it in place. The concave part of each cone has been covered with a second thickness of sheet-copper which is held in place by an overlapping margin.

There was also found near the ear-ornaments what seems to be the lower half of an ill-made, ceremonial axe belonging to the hoe-shaped class, having part of a perforation in the blade. The material apparently is a soft claystone which would unfit the axe for any practical use.

Throughout the digging there were found in the mound only two small fragments of earthenware, both undecorated.

The surrounding area showed no evidence of having served as a place of abode.

Mound at Gahagan, Red River Parish, La.

At Gahagan, a settlement near Red river, is the plantation of Mr. W. R. Hollingsworth, of that place. In aboriginal times a considerable population must have inhabited this place, to judge from the number of remnants of mounds that are scattered throughout the fields.

In sight from Gahagan, and also from the river, in the middle of a cultivated field, is a mound of clay with a small admixture of sand, which has suffered greatly from the plow and from wash of rain on the loosened soil. Presumably the diameters of the mound at one time were approximately 80 and 110 feet, but at present so much has been plowed and washed from its sides that it appears like a peak of much less diameter placed on the central part of a platform from 2 to 4 feet in height. On this platform are stumps of small trees, recently cut, whose roots are denuded of soil from 1 to 3 feet above the surface, showing how much the mound has lost in height in its outer parts even in very recent times.

The height of the mound from the level ground to the summit of the peak is slightly more than 11 feet, measured from the outside.

Various trial-holes in the lower parts of the mound were without result, but an excavation 12 feet square, put down about centrally in the peak we have described, intersected a grave-pit. This pit was not noticed by us at first, as the upper 5 feet of soil on the mound was moist and was approximately uniform in color, but below

this moist ground the soil was dry and hard, and local layers in it were plainly distinguishable. A careful examination made after the grave-pit was recognized showed it in one place to extend upward through the moist soil to within 3 feet of the surface, where it was lost, but in all probability the grave had been put down from the surface.

The pit, which was traceable with the greatest ease in the lower and dry part of the mound, the mixed material with which the pit was filled contrasting with local layers through which the grave had cut, had two sides running about NW. and SE. These sides differed slightly in length, one being 12 feet 2 inches and the other, 13 feet. The ends of the grave, which were about at right angles to its sides, were 8 feet 9 inches and 7 feet. The grave expanded somewhat in the middle, the distance across it there being 9 feet 8 inches.

The depth of the grave-pit, determined from the highest part of the mound above it, was about 11 feet. Approximately 7 inches below the bottom of the grave was a layer of dark soil, a few inches in thickness, which evidently was the original surface of the ground. Presumably, however, the proximity of the bottom of the pit to the base of the mound was accidental.

On the bottom of the grave lay five skeletons, all at full length on the back, as follows:

Burial No. 1, adult, the head directed NW.

Burial No. 2, adult, the feet 18 inches apart, head NW.

Burial No. 3, adult, head NE.

Burial No. 4, adolescent, head NW.

Burial No. 5, adolescent, having an arrangement of the arms different from that usually found in the case of extended burials, where the arms, as a rule lie at length along the sides of the body. In this case the right forearm extended across the trunk diagonally down, while the left forearm was doubled up, the hand resting on the left shoulder. The head of this burial was directed NE.

Burials Nos. 1 and 4, as may be seen by the plan of the grave (Fig. 12), lay each along a side of the grave, while Burial No. 5 rested across one end of it. Parallel to the opposite end and somewhat more than 2 feet from it was Burial No. 3. Burial No. 2 lay in the space enclosed by the others.

Burials Nos. 4 and 5, the adolescents, had no artifacts in immediate association.

Burials Nos. 1, 2, and 3, the adults, lay in such a way that the skulls of two of them were but 3 inches apart, while the skull of the third (Burial No. 1) was about 2 feet from the other two.

Carefully arranged within the space between the three skulls, but apparently more closely related to Burial No. 2, were: a group of slender, bone pins, badly decayed and broken; an ornament of sheet-copper, evidently originally of considerable size, represented when found only by small fragments; a celt of a compact rock, 2.75 inches in length; a graceful lancehead of flint, 3.75 inches long; a handsome, barbed arrowhead of flint, about 1.5 inch in length, with five flint

points, some .5 inch long, some slightly more, near it; a handsome boatstone[1] of diabase, 3.75 inches long, having the usual concavity in the base but without perforations; remnants of two small ornaments of sheet-copper, decayed through and through; a cylinder, about 2 inches long and .5 inch in diameter, of decaying ligneous material which Prof. George B. Sudworth, Dendrologist of the United States Department of Agriculture, Washington, kindly has determined to have been wood of

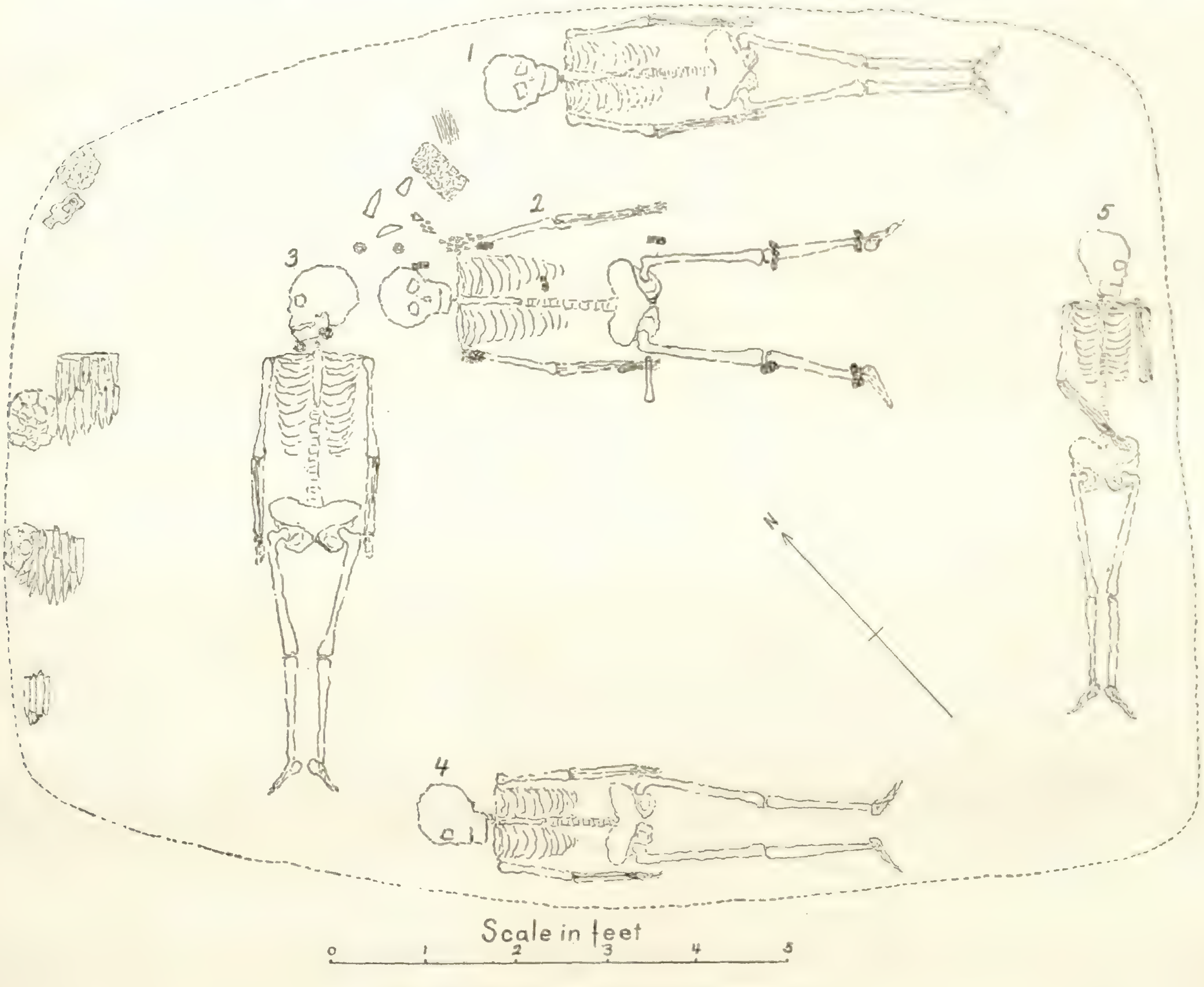

FIG. 12.—Plan of grave. Mound at Gahagan, La.

the elm (*Ulmus americana*). This last ornament, like similar ones from this mound, had been copper-coated but was too badly decayed for preservation as a whole.

With the exception of the deposit just described, which extended to the skull of Burial No. 2 and continued with this burial, and presumably belonged to it,

[1] For other boatstones found west of Mississippi river see our account of the mounds near Chandler Landing, Prairie Co., Ark. (White river), in which a number were found, including one of rock crystal. "Antiquities of the St. Francis, White and Black rivers," p. 345, 346. Journ. Acad. Nat. Sci. of Phila., Vol. XIV.

Burial No. 1 had no artifacts in close association with it. It is possible, however, that various objects to be described later, which lay along one end of the grave, were put in for the dead in common, in which event the remains of the adolescents also shared in the offering.

Burial No. 2, continuing the deposit described as enclosed by the three skulls, had under the skull an ornament of sheet-copper and wood, greatly decayed.

Along the left humerus, a continuation of the deposit of arrowheads already noted, were fourteen others similar to the smaller ones in it.

At the upper part of the left humerus was a tubular bead of the kind already described. A similar one lay on the thorax.

At the right shoulder were traces of sheet-copper.

At the right wrist was a mass of galena,[1] and under the right hand, lying transversely, was a carefully-made ceremonial axe of quartzite, 6.25 inches in length.

Lying by the outer side of the upper part of the left femur was a copper-coated bead like the others, and around the upper part of the left tibia were fragments of a number of similar beads which, strung together, probably had encircled the leg.

At the right knee was a small ornament of decayed wood which had been coated with copper, in fragments, and which had been a rattle, as shown by the presence of a number of small pebbles.

At both ankles were the remains of a number of ornaments of wood, copper-coated, crushed together and completely out of shape, among which were small pebbles, showing that here, too, rattles had been present. With these were some very small, shell beads.

Burial No. 3 had, under the chin, a circular ornament of wood, in the form of a disk, about 1.5 inch in diameter, copper-coated on both sides, and the decaying remains of sheet-copper and wood at the left of the lower jaw.

Along one end of the grave, and nearest to Burial No. 3, but 18 inches and

[1] Galena, lead sulphide, as is well known, is often found in the mounds, and when thus found is usually coated with the white, lead carbonate. Lead carbonate is the white lead of commerce. The aborigines did not possess the chemical knowledge to make this carbonate from lead, but some of them scraped the carbonate deposit from galena for use as paint. Lumps of galena were found by us in the mounds and cemeteries of the great site at Moundville, Ala., where also numerous ceremonial palettes of stone, smeared over with the white, carbonate paint, were recovered.

The mass of galena found in the mound at Gahagan differs from the masses of this material hitherto met with by us in that it is lighter in weight and much more friable. It seemed to us, from its appearance, that the mass had been pulverized rather than having been a solid lump, when left in the mound. The mass was submitted to Doctor Keller, who reported upon it as follows: "The material from Burial Number 2, Gahagan, La., consists chiefly of carbonate of lead. It was undoubtedly formed by gradual oxidation from galena, of which particles are still contained in it. I have endeavored to ascertain whether this material was originally in the form of powder or massive, but I confess that I am unable to arrive at a definite conclusion as to this. On the one hand I have seen such earthy nodules of cerusite with streaks of unaltered galena in them, and, on the other, I find on removing the carbonate with acetic acid that the remaining galena is in very fine particles. The external shape of the lump is not unlike that of nodules of natural earthy cerusite. There is considerable silicious matter admixed to the lead compound."

If this mass consisted of powdered galena, probably held together by grease, it was doubtless used by the natives as a cosmetic, as it is used today by natives of Nigeria and farther north. See J. D. Falconer, "On Horseback Through Nigeria," pp. 67 and 116.

more from it, extended various deposits in a line. At the northern corner, together, were Vessel No. 1 and a pipe of earthenware.

This unique pipe, 5.5 inches in height (Figs. 13, 14, 15, 16), consists of a human figure seated on the lower limbs which extend parallel beneath, the feet turned inward. The figure is not turned toward the outside world as figures on

FIG. 13.—Pipe of earthenware, with interior passage between the bowl and the mouth of the figure. Gahagan, La. (Height 5.5 inches.)

FIG. 14.—Earthenware pipe. Side view.

the pipes of the white man invariably are, but faces the smoker, as aboriginal pipes sometimes were constructed, the mind of the savage apparently possessing a smaller share of altruism (or an inferior measure of vanity, shall we say?) than that of civilized man.

The figure is represented as holding, not a simple pipe-bowl (as figures of this kind in connection with aboriginal pipes usually do, the orifice for the stem being in the figure), but a regular biconical pipe complete.

FIG. 15.—Earthenware pipe. Back view.

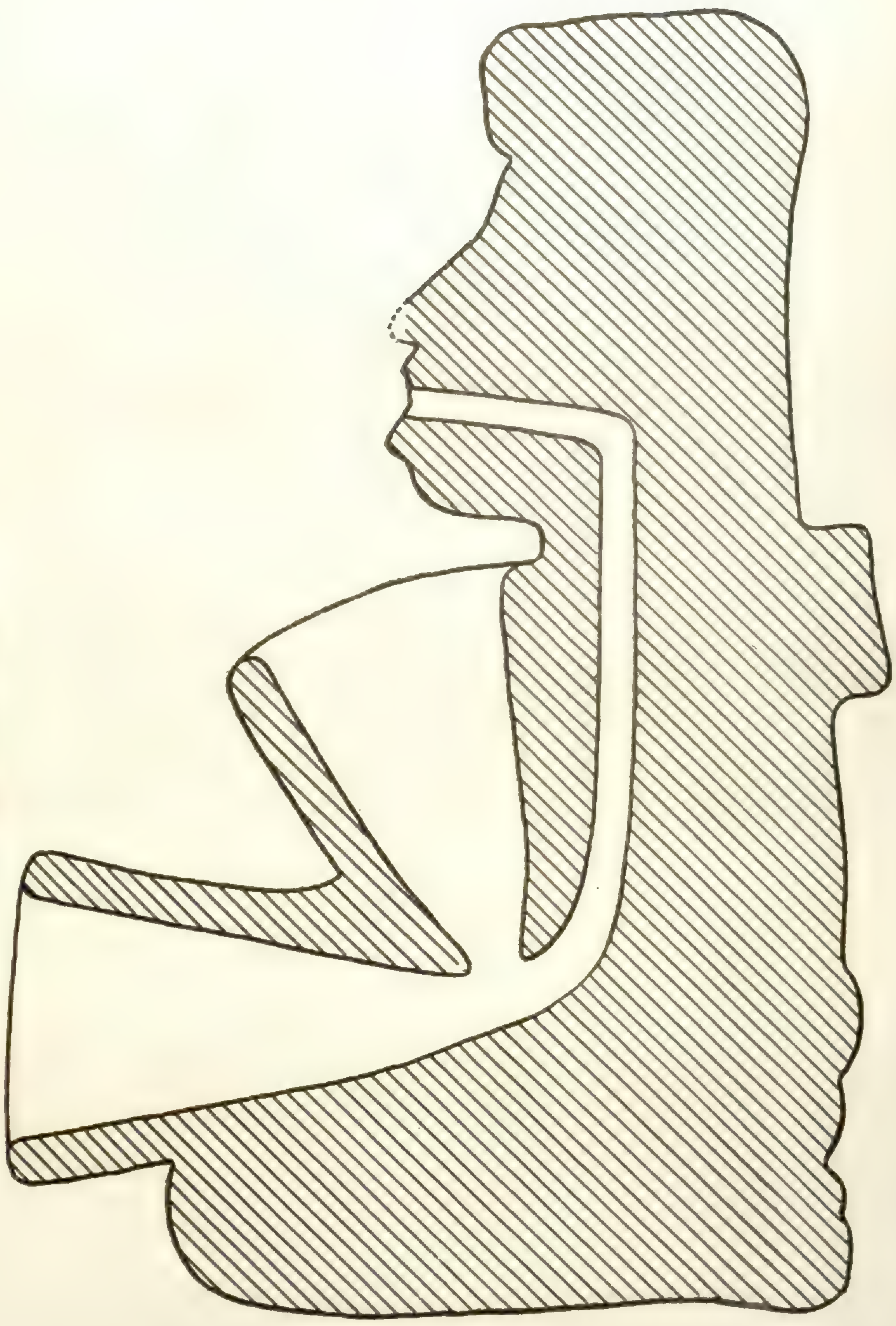

FIG. 17.—Earthenware pipe. Vertical section, showing passageway between the bowl of the pipe and the mouth of the image. (Full size.)

FIG. 16.—Earthenware pipe. View of base.

We now come to the most striking feature of all. Connected with the base of the pipe-bowl is a passageway ascending through the body of the figure, as shown in the diagram (Fig. 17), and ending at the mouth, which is open, in a way that smoke can be made to emerge from the mouth when the pipe is in use. This feature we believe to be hitherto unreported in connection with aboriginal pipes.

Dr. J. Walter Fewkes writes as to this pipe as follows:

"I do not recall ever having seen an aboriginal pipe constructed in the way you describe, but I can readily see how it is possible to combine a '*cloud blower*' and a

Fig. 18.—Selection of flints from Deposit No. 1. Gahagan, La. (Full size.)

Fig. 19.—Selection of flints from Deposit No. 2. Gahagan, La. (Full size.)

pipe in such a way that smoke could be blown on sacred objects at the same time the priest smokes.

"Some tubular pipes are used by the Hopi as cloud blowers, smoke being blown through them as I have described in my account of the 'Snake Ceremonial at Walpi' (Journ. Amer. Eth. and Arch., Vol. IV, p. 32), in others smoke is sucked into the mouth. Combine both and change form, and you have your pipe."

We now return to the deposit. Somewhat farther along was a deposit of twenty-eight points and blades of flint, one gracefully curved for use as a knife, ranging in length between 4.1 and 8 inches. This deposit, which was 8 inches in height, included but two points or blades not directed the same way. One of these was reversed; the other lay transversely across one end of the pile. A selection from these flints is shown in Fig. 18.

Parallel with the deposit of flints and placed between some of them were a number of bone pins (at least seven) very badly decayed and broken, and one flat implement of bone.

Also with the flints were thirteen small chips of the same material, and Vessel No. 2, in fragments, as were all vessels from this place, lay against the wall nearby.

Still farther along was another deposit of flints, also consisting of twenty-eight blades and lance-points, ranging in length between 3.9 inches and 8.9 inches. Three selected specimens from this deposit are shown in Fig. 19. With this deposit were part of a large blade, and two well-made arrowheads of flint, with triangular blades. The deposit lay in a pile with no uniformity as to direction of the points. With it also were: twenty-three chips, all of black flint, somewhat irregular in shape, none more than 1.1 inch in maximum diameter; a large number of badly-decayed, bone pins, crushed together; a sandstone hone for sharpening points by longitudinal application and having at one end a semicircular notch, perhaps for the smoothing of shafts of arrows (Fig. 20); a number of bone implements decayed past preservation; a beautiful little chisel of shale, 4 inches in length; red pigment; a small sandstone hone and part of another.

FIG. 20.—Hone of sandstone. Gahagan, La. (Full size.)

FIG. 21.—Deposit No. 3. Flints. Gahagan, La. (Full size.)

Partly surrounded by the flint deposit was Vessel No. 3, a bottle.

The final deposit along the wall consisted of six points of flint between 2.75 inches and 5.75 inches in length and having no uniformity of direction as to the points (Fig. 21).

As we have said, Gahagan (see map) is much farther up on Red river than are the other Louisiana sites in which pottery was met with by us. The earthenware from Gahagan is of very different quality from that found by us in sites farther down the river, that from Gahagan being hard, black, and with a surface having considerable polish, which readily lent itself to incised decoration.

As noted, but three vessels came from the interesting mound at Gahagan, but all three are distinctive of the place, bearing decoration, profuse in two instances, consisting of series of extremely fine, parallel lines, very closely placed, in combination withspaces partly cut through the ware. Red pigment has been in the lines and in the excised spaces.

Vessel No. 1. A graceful vase with flat bottom, the body first expanding and then constricted toward the rim. The decoration is made up of series of diagonal and circular lines in connection with spaces of the kind already described (Fig. 22).

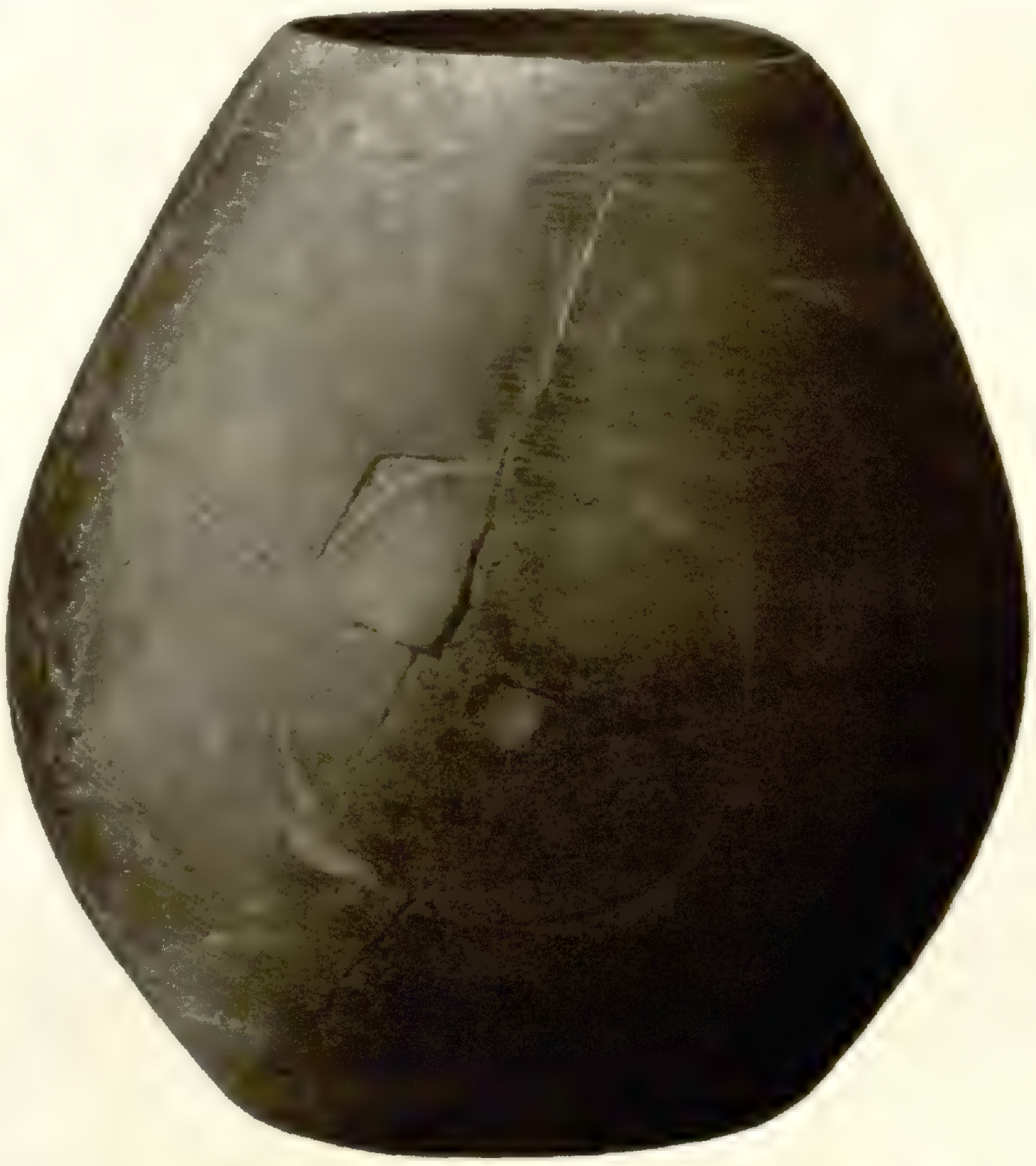

Fig. 22.—Vessel No. 1. Gahagan, La. (Height 4.9 inches.)

Vessel No. 2. A wide-mouthed bottle with flat base, undecorated as to the body, but having around the neck a series of lines, some diagonal, some vertical, in connection with the excised spaces found on the pottery from this place. Height, 5.1 inches.

Vessel No. 3. A bottle, with tapering neck and base almost flat (Fig. 23), having by way of decoration designs similar to those described as on Vessel No. 1.

Various holes sunk by us from the bottom of the grave and in parts of the peak outside the grave came upon the dark layer which we have described as marking the surface before the mound was built. Trial-holes in the shallow parts of the mound came upon it also, consequently, so far as our knowledge extends, no pit below the base of the mound is present; but to determine this matter definitely and to learn if any other burials are in the mound, its demolition would be necessary.

FIG. 23.—Vessel No. 3. Gahagan, La. (Height 9 inches.)

MOUND NEAR TAYLORTOWN, BOSSIER PARISH, LA.

About one mile NNW. from Taylortown, on property of Mr. A. J. Hall residing there, on the edge of a field bordering Flat river,[1] is a mound of alluvial soil, 3 feet high and 43 feet in diameter of base. These dimensions of the mound as it appeared at the time of our visit do not, however, convey an exact idea of the former size of the mound, inasmuch as the river, in time of flood, has left a considerable deposit around the mound, thus lessening its height by about one foot, as shown by measurements made by us which reached gray soil, indicating the original surface of the ground, at a depth of about 4 feet below the top of the mound, and a road made through part of the mound has, to some extent, lessened its diameter.

An excavation, central in the mound, approximately 5 feet in diameter and 3 feet in depth at the time of our visit, had been dug by seekers after treasure. We were informed by our agent that at the time of his visit to the mound in his preliminary search, fragments of human bones lay on the surface, near this excavation.

Thirteen large trial-holes were sunk by us into the mound proper and into the level ground traversed by the road to which we have referred. Thirteen burials were encountered, remains being found in most of the holes.

With the exception of one burial 10 inches down, none was encountered at a depth less than somewhat more than 3 feet, while most of the burials were from 4 to 5 feet down and one was a trifle in excess of 5 feet in depth. Hence it will be noted that some of the burials were below the original surface of the ground.

The thirteen burials, none of which was in a condition to save, were of the following kinds:

Skeletons partly flexed on the right side, 5

Skeletons partly flexed on the left side, 3

Bunched burials associated with cremated human remains, 4

Bunched burial without cremated human remains, 1

The calcined fragments of human bones with the bunched burials sometimes were in a small deposit with the unburnt bones of the burial, and sometimes lay scattered throughout the burial.

Of the five bunched burials, one was without a cranium, while the others had two, four, seven, and thirteen, respectively. These crania were in no case recovered entire.

Artifacts found in this mound were dishearteningly few, and nothing was met with in the soil apart from human remains, not even a sherd.

With Burial No. 1, which was 10 inches from the surface, and consisted of a few unburnt bones without a skull, was an undecorated pot 5 inches in diameter and about 3 inches in height.

Burial No. 3, which was bunched, with seven skulls and cremated remains, had in association a bone of a deer, badly broken, having the articular part removed at

[1] We are informed that this "old river" leaves Red river at one place and joins it at another. Doubtless Flat river at one time was part of Red river, and probably then the mound in question stood on its bank.

one end and partly cut away somewhat obliquely at the other end. With this were fragments of at least two slender bone implements and the penis-bone of a raccoon, from which the distal end is broken.

A human lower jaw from this mound, presented by us to the Army Medical Museum, Washington, D. C. (catalogue number 14,237), is pronounced by the authorities of the museum to show *osteitis deformans.*

The area surrounding the mound is covered by alluvial deposit to an extent practically precluding all chance of discovering aboriginal cemeteries, if any are present.

Mound at Sunny Point, Bossier Parish, La.

This quadrangular mound, about one-quarter mile from the river, on Sunny Point, is about 6 feet in height at the present time, though it is apparent that a deposit of mud from the river in times of overflow, has considerably lessened the original altitude. The basal diameters N. and S. and E. and W. are respectively 72 and 93 feet. The diameters of the summit-plateau, in the same directions, are 32 and 50 feet. This mound was covered with recent graves, and permission to dig into it was withheld.

Mounds near Pickett Landing, Caddo Parish, La.

About two miles in a straight line westwardly from Pickett Landing is the plantation of Mr. H. L. Heilperin, of Shreveport, La., on which is a fine group of mounds. Near some of these are small ponds whence material for the mounds was taken.

These mounds, seven in all (not taking into account several insignificant rises of the ground), form an irregular ellipse, two mounds facing each other ESE. and WNW. at a distance of about 615 yards. The transverse diameter of the ellipse is 150 yards. On the southern side of the ellipse are two mounds, the remaining three being on the northern side.

These mounds, all but one of which have houses upon them, range between 2 and 15 feet in height. All probably have been quadrilateral, with flat tops, though all but two have been worn and washed by rain to an extent that makes the determination of their original shape almost impossible.

The westernmost mound, which forms one extremity of the ellipse, is fairly symmetrical, square, with diameter of base somewhat more than 150 feet and with a perfectly flat summit-plateau about 70 feet in diameter. Its sides do not face the cardinal points, one being opposite to NNE.

The other of the two most symmetrical mounds of this group lies eastsoutheastwardly from the one just described and has no intervening mound. It is quadrangular, with a flat summit-plateau, and has basal diameters (similar in direction to those of the other mound) NNE. and SSW. 160 feet, and WNW. and ESE. 220 feet. The summit-plateau in corresponding directions is 90 feet and 145 feet. The height of this mound is a trifle more than 15 feet.

There seems to be no history of discovery of bones or of artifacts at this place, and with the exception of a few sherds, probably exposed by wash of rain on the surface of the largest mound, nothing was found by us either superficially on the plantation or in numerous trial-holes put down in the summit-plateaus of the two largest mounds and in two smaller mounds, on all four of which dark soil indicated former aboriginal abode.

Dwelling-site material, probably indicating the presence of cemeteries at this place, no doubt lies beneath layers of deposit from periods of overflow.

In some of the mounds of this important site probably interesting burials might be found did not the presence of buildings upon the mounds make a careful investigation impossible.

Mound on Cedar Bluff Plantation, Caddo Parish, La.

Cedar Bluff Plantation is the property of Mr. J. S. Swann, whose residence is on Cedar Bluff immediately across the river and opposite the plantation.

About one-quarter mile in a northwesterly direction from Cedar Bluff Plantation Landing, in full view from the levee as it was at the time of our visit, was a mound of sand, 4.5 feet in height, having a very irregularly circular outline, due probably to tillage. Its basal diameter is 73 feet.

Eight trial-holes came upon a layer of dark sand, having a maximum thickness of 3 inches. This layer was 3.5 feet below the highest parts of the mound and proportionately less under more marginal parts. In places in the layer was midden debris, including fragments of shells, parts of bones of lower animals, and several fragments of pottery, two of them of excellent ware, having decoration conferred with a fine point but somewhat lacking in regularity. No burials or artifacts other than pottery were encountered.

Mound on the Thompson Place, Caddo Parish, La.

On the plantation of Mr. A. R. Thompson, who resides on it, is a mound slightly more than 7 feet in height, about three-quarters of a mile W. by N. from the landing. This mound, which has been quadrangular, has been under cultivation, so that the corners are somewhat rounded. Its sides almost exactly face the cardinal points. The basal diameter N. and S. is 105 feet; the minor diameter, 72 feet. The diameters of the summit-plateau are 53 feet and 20 feet respectively.

Eight trial-holes sunk into this mound, the soil of which was dark and had a promising appearance, soon penetrated sand of a raw, yellow shade, in which was found no indication of the presence of burials. The surrounding area showed no sign of having served as a place of abode in aboriginal times.

Mounds near Byram Ferry, Bossier Parish, La.

About one mile ESE. from Byram Ferry, in woods belonging to Mr. A. L. Byram, who resides some distance back in the hills, are two mounds within a few yards of each other.

The larger of these mounds, somewhat less than 9 feet in height, is oblong, with rounded corners. Its sides practically face the cardinal points; its diameter of base, N. and S., is 132 feet. The diameter of the summit-plateau in the same direction is 80 feet. The minor basal diameter is 98 feet, about 50 feet of which is covered by the summit-plateau, which is not flat but has an upward slope from south to north.

Trial-holes put down from the plateau of this mound showed the northern part of it to be of clay superficially, which being dug through gave place to fine sand. Excavations in the southern part of the mound were in sand from the beginning.

No bones, human or animal, were found, and no artifacts, fragmentary or entire, were met with in the digging.

The smaller mound, of sand, 4 feet in height, had a circular outline of base with a diameter of about 75 feet. The summit-plateau was 35 feet in diameter.

In this mound trial-holes were put down and in addition a central excavation 18 feet square. A layer of dark material, about 6 inches thick, was encountered 4 feet 10 inches from the surface. This layer evidently marked the original surface of the ground. It was without break of any kind, and it was evident that no pits extended below it. Nothing was found in the digging except one rude arrowhead of flint.

We now come to sites along Red river in Arkansas.

Mound near Hightower Landing, Lafayette County, Arkansas.

About one mile NNE. from Hightower Landing, in woods, is a mound about 4.5 feet in height, oblong, with rounded corners. Its sides face the cardinal points; its diameter N. and S. is 78 feet, and 57 feet E. and W. The summit-plateau, in the same directions, respectively, is 58 feet and 40 feet.

No bone or artifact of any kind was found by us in this mound, which proved to be of sand with a slight admixture of clay.

Mound near Diggs Bluff Landing, Miller County, Ark.

Diggs Bluff Landing is a short distance below Diggs Bluff, which is the end of low hills there approaching the river.

About one-half mile ESE. from the landing, in a cultivated field forming part of a plantation belonging to Mr. C. L. Bailey, of Doddridge, Ark., is a mound which, in the past, has been under cultivation. Owing to this, probably, its present shape is decidedly irregular, though seemingly the mound has been quadrangular with a considerable plateau. The basal diameters are 196 feet and 106 feet, the plateau having diameters of 138 feet and 62 feet. The mound is 6.5 feet in height.

Sixteen trial-holes put down from the summit-plateau showed the mound to be almost exclusively of sand. No bones, midden debris, or sign of grave were encountered.

Mound near Sulphur River, Miller County, Ark.

In swamp, dry at the time of our visit, is a mound which may be reached by going about one mile up Sulphur river, a tributary of Red river, when the mound will be found 100 yards north of Sulphur river and an equal distance west of a bayou tributary to it. This mound, 6 feet in height, originally quadrilateral with a summit-plateau, has lost much of its symmetry through trampling of cattle and wash of water. Its basal diameter ENE. and WSW. is 126 feet, and 116 feet NNW. and SSE. The corresponding diameters of the summit-plateau are 82 feet and 67 feet.

Investigation showed the mound to be a mixture of sand and clay. No evidence of use for burial purposes was observable.

Mounds on the Haley Place, Miller County, Ark.

The Haley Place, well known some distance along the river for its aboriginal mounds, is the joint property of Mr. T. G. Batte, living nearby, and of the Merchants and Planters Bank of Texarkana, Ark.

The Haley Place in part borders Red river, but its upper portion is shut off from the river by another property. In this upper part of the Haley place is a short segment of a former course of the river, now closed at each end, known as Haley Lake.

Near this "lake" is what remains of a mound after continued wear and wash. Upon it is a frame building. Farther back, but in full view from the "lake," to which one of its shorter sides is about parallel, is a mound which has been quadrangular, no doubt, but whose sides and corners have been considerably worn by trampling of cattle and by wash of water. This mound, slightly more than 17 feet in height, has a basal diameter E. by S. and W. by N. of 160 feet, and of 120 feet S. by W. and N. by E. The summit-plateau is 105 feet and 90 feet in the same directions respectively. It is not level. In the western part a slope upward begins, and continues for 18 feet until a height of 3.5 feet above the eastern end of the plateau is reached. Level ground then continues to the western end of the plateau. These 3.5 feet are included in the total height of the mound as given by us. In sight from the mound is a considerable depression whence material for its building was taken.

Trial-holes in this mound soon came to raw-looking sand, while other holes reached the sand after passing through several feet of dark soil.

Presumably this mound was the one used as a place of abode by the chief of the aborigines who occupied this site.

About 60 yards in a northwesterly direction from the domiciliary mound is another whose sides have been subject to considerable wash from rain, and probably, as to their lower parts, from the river in flood time. Our measurement, taken from the surrounding level, determined the height of this mound to be slightly in

excess of 11 feet. It is 78 feet across its irregularly circular base; its summit-plateau, also circular, is 32 feet in diameter. This mound had the appearance of having been erected for some purpose other than domiciliary. About centrally in the summit-plateau an excavation was made having dimensions as follows: 12 feet at the northern end, 15 feet at the southern end, 16 feet at the eastern and western sides, which extended about N. and S. The excavation was carried to a depth of 10 feet 10 inches, where it came upon a layer of soil 8 inches in depth, approximately. This layer was black and had every appearance of having been the surface of the ground prior to the building of the mound. Evidence of disturbance found in this layer led to the discovery of a remarkable, central pit under the mound, which will be described in due course.

In addition to the excavation referred to and to the complete investigation of the great pit, shafts were cut from the sides of the excavation into the remainder of that part of the mound which lay beneath the summit-plateau, and these shafts, in some cases, came upon pits running down to graves, some in the mound proper, and some below it, all of which were carefully explored.

The mound was composed of a mixture of clay and sand, the clay largely predominating. The material varied considerably in color and many local layers were present. Altogether the mound was an ideal one for the discovery and delimitation of pits, which often are difficult to determine in mounds of homogeneous material.

Incidentally it may be said that after excavating the upper 2.5 to 3 feet, where the earth was moist and fairly soft, the digging was through material so dry and hard that picks were needed throughout and the work was slow and difficult. The entire excavation was filled at the close of our work, leaving the mound as useful a place of refuge as we found it.

Burial Number 1.

At the NE. corner of the excavation (see plan, Fig. 24), at a depth of 6 feet 4 inches to the upper part of the burial, was the skeleton of an adult, extended on the back. The skull, whose direction, had it been present, would have been N. by E., was missing. This burial, doubtless like all the others in the mound or below it, lay at the bottom of a pit, but as the burial was in the main excavation and was dug down upon by those engaged in the general digging, it was found before the limits of the pit were recognized.

At the right shoulder were two bottles in fragments. Over the right elbow was a shell drinking-cup, much decayed and badly broken. Outside the right elbow and the right forearm respectively, were two pipes of earthenware, in fragments, from which mouth-pieces were absent. These pipes, which lay in line, the stems directed toward where the skull would have been, are of an interesting type, to which belong all the numerous earthenware pipes found in this mound, with one exception. As this type will be fully described and figured later in this account, it will suffice to say here that the bowl and stem are one piece, and that the length ranges between 5.5 inches and 22.6 inches.

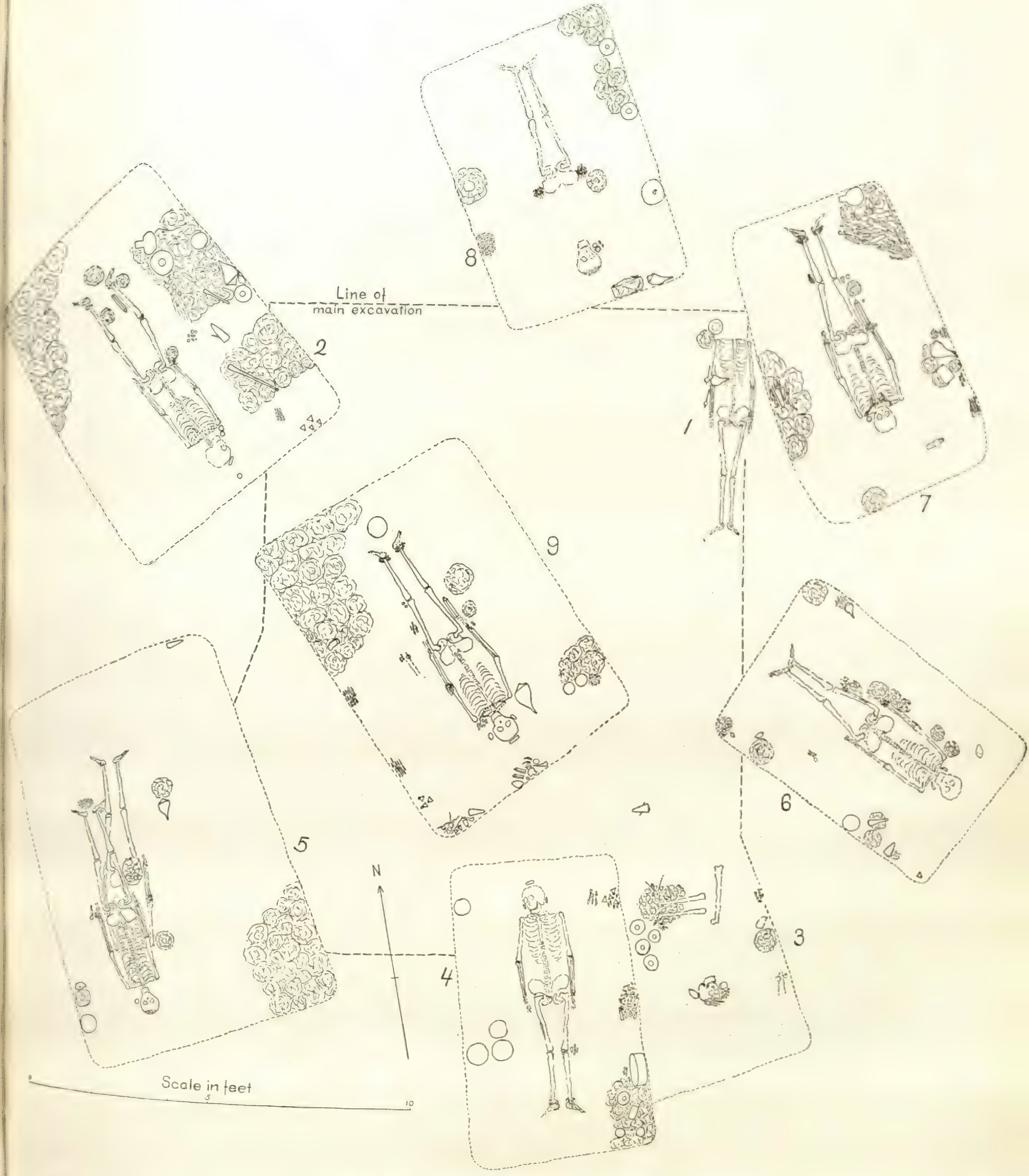

FIG. 24.—Plan showing burials. Mound at Haley Place, Ark.

With decaying fragments of ribs (all the bones of this skeleton were in bad condition) was a small arrowhead of flint, somewhat broken.

Burial Number 2.

Near the NW. corner of the main excavation a pit was encountered. It was not possible to determine exactly where this pit began, since, as we have said, the soil of the upper few feet of the mound was moist and soft and had a homogeneous appearance. Not far below this material, however, the pit was clearly defined, the sides of it enclosing a broken, mixed, and granular material readily distinguishable in the digging. The downward course of the pit, moreover, was apparent where it cut through local layers in the mound, and was darker and more variegated.

The pit continued down, cutting through the 8 inches of the dark layer marking the base of the mound, and extending 2 feet 8 inches farther, so that, if it began at the surface, as no doubt it did, it had a depth of about 14 feet—a depth, we believe, previously unheard of in connection with aboriginal graves. From the line of the base down to where the pit ended, it ran through red clay, which, to a certain depth, was the underlying soil of the field. With this red clay the mottled material filling the grave-pit was in still more marked contrast than it was with the mixture of sand and clay composing the mound, so that the graves extending below the base of the mound were almost as readily distinguishable, in that part, as they would have been if they had been walled around with brick.

The pit at the base was almost oblong—about 8 feet in length, 5 feet 10 inches at one end and 6 feet 6 inches at the other end—as may be seen by the plan which was drawn to scale on the spot.

About centrally on the base lay, extended on the back, a skeleton of an adult, probably a male, the head directed SE. by S., the face turned to the right side. The bones were decayed and crushed. About 6 inches from the skull lay an imperforate, undecorated shell disk about 1.25 inch in diameter.

Near the forehead, parallel with the body, was a bead of shell, almost tubular, 3.75 inches in length, .6 inch in diameter.

At the neck were twenty-one pearls, from .12 to .4 inch in diameter, perforated for use as beads. With these was an imitation of a canine tooth of a large carnivore, wrought in shell, perforated for suspension, which probably had served as a pendant with the pearls.

Between the right shoulder and the face lay two shell disks, both undecorated and imperforate, each about 2 inches in diameter.

At the right wrist were seven shell beads, globular and each about .75 inch in diameter. Near these was a pottery vessel crushed to fragments.

At the inner side of the right tibia and parallel with it lay a handsome quartz crystal, about 7 inches in length and 1.5 inch in maximum diameter, the point of the crystal toward the knee of the skeleton.

At the right ankle were nine beads of shell, each about .6 inch in diameter. Near these lay a water-bottle, badly crushed.

At the inner side of the left leg was a small earthenware vessel, and at the left ankle were nine shell beads averaging about the same in size as do other shell beads found with this skeleton. A bowl much broken lay at the feet.

In addition to these various objects placed immediately with the skeleton, an interesting mortuary deposit had been arranged in the pit. Placed vertically near the eastern corner of the grave were four earthenware pipes, the bowls downward. These pipes, of the type to which reference has been made, included two somewhat incomplete, they either having been put into the mound with parts missing, or parts of them had been thrown back and lost by our diggers who came upon them unexpectedly. One of the other two pipes, which were entire, was 22 inches in length. This deposit was not upon the base of the pit, the bowls of the pipes having been placed some distance above it, the stems projecting upward. The bowl farthest down (the bowls were not on the same plane) was 7 inches above the base.

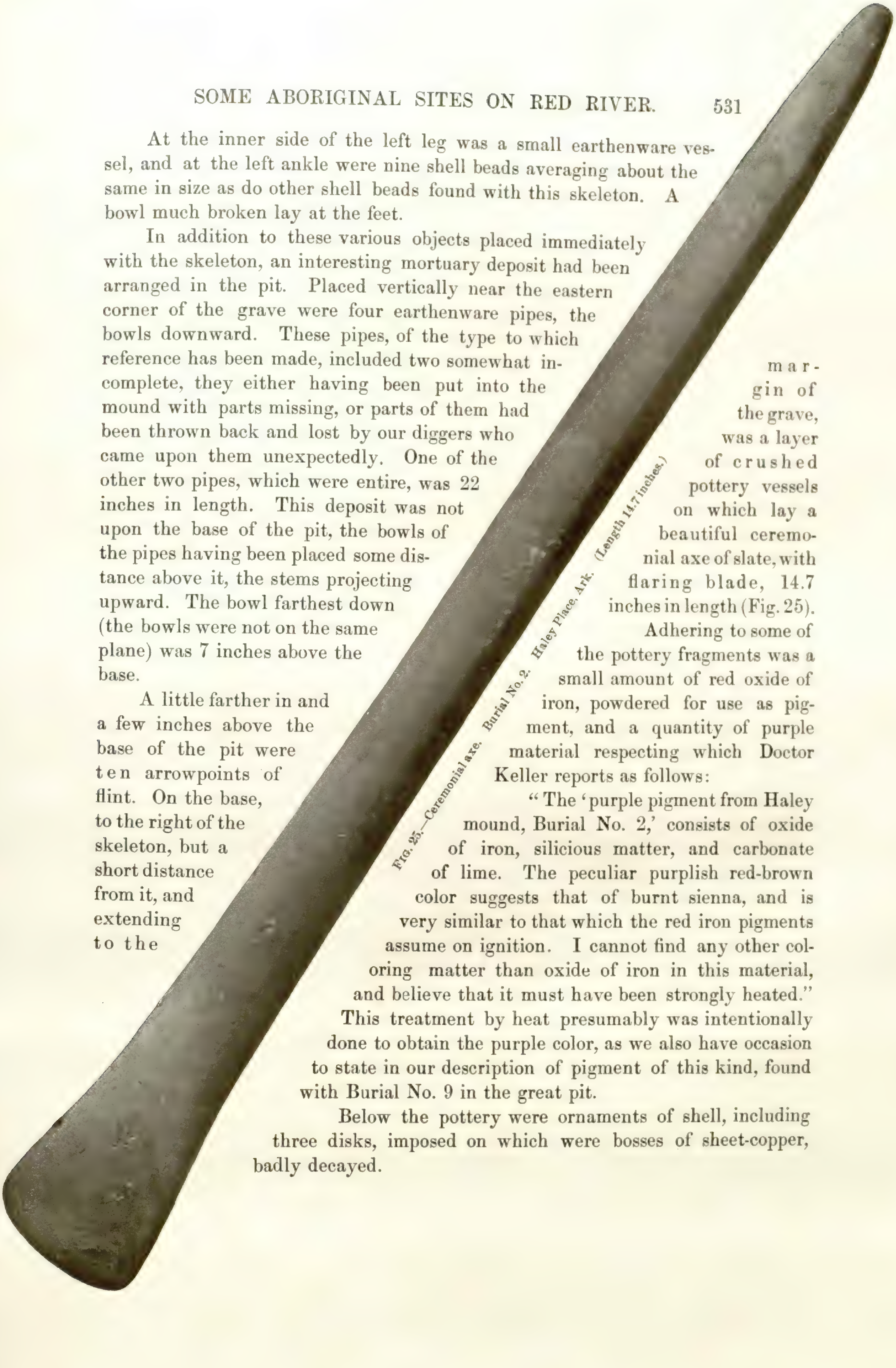

Fig. 25.—Ceremonial axe. Burial No. 2. Haley Place, Ark. (Length 14.7 inches.)

A little farther in and a few inches above the base of the pit were ten arrowpoints of flint. On the base, to the right of the skeleton, but a short distance from it, and extending to the margin of the grave, was a layer of crushed pottery vessels on which lay a beautiful ceremonial axe of slate, with flaring blade, 14.7 inches in length (Fig. 25). Adhering to some of the pottery fragments was a small amount of red oxide of iron, powdered for use as pigment, and a quantity of purple material respecting which Doctor Keller reports as follows:

"The 'purple pigment from Haley mound, Burial No. 2,' consists of oxide of iron, silicious matter, and carbonate of lime. The peculiar purplish red-brown color suggests that of burnt sienna, and is very similar to that which the red iron pigments assume on ignition. I cannot find any other coloring matter than oxide of iron in this material, and believe that it must have been strongly heated." This treatment by heat presumably was intentionally done to obtain the purple color, as we also have occasion to state in our description of pigment of this kind, found with Burial No. 9 in the great pit.

Below the pottery were ornaments of shell, including three disks, imposed on which were bosses of sheet-copper, badly decayed.

On a space intervening between the layer of earthenware we have described and a somewhat similar one farther along on the right-hand[1] side of the grave, lay a handsome celt of basanite, 6.8 inches in length, beneath which was part of the stem of an earthenware pipe. Near the celt were several small objects of shell. These objects—small disks, small oblong sections of shell, triangles, etc.—were numerously found in this mound. As a rule they are imperforate and without decoration. A few, however, have holes in them. On some are traces of asphalt, showing them to have been fastened to other objects. We believe them to have belonged to head-ornaments and perhaps to ornaments otherwise worn.

On the second deposit of pottery to which we have referred, which was mostly crushed but included several entire vessels, near the right hand of the skeleton, were five earthenware pipes, all broken and some crushed to fragments. Two of these pipes, the broken parts cemented together, are 22.25 and 22.6 inches in length respectively.

On this pottery deposit also lay a chisel-shaped ceremonial axe of slate, 9.1 inches in length. A drinking-cup wrought from a conch-shell (*Fulgur perversum*), whose excellent state of preservation made us regret the entire absence of incised decoration upon it, was at the edge of the pottery deposit, as was a large mussel-shell (*Unio*) in fragments.

On the base, among the pottery, resting against a water-bottle of a kind unusual in the region and probably brought from Missouri (Plate XXXVII), lay a human lower jaw having an end of the ceremonial axe we have referred to lying upon it. This jaw, which is in an excellent state of preservation, far better than were the bones of the skeleton, had no connection anatomically with the skeleton, which had a mandible in place. The detached jaw bears numerous scratches and marks of scraping, which seemingly indicate that the flesh was removed from the jaw with the aid of some instrument preparatory to preservation. The mandible, moreover, is smooth, even almost polished in places as if it had been in possession of its secondary owner for a considerable period of time. Its excellent state of preservation calls to mind that of many bone tools which have thoroughly hardened before inhumation, and whose state of preservation usually excels that of the skeleton with which the tools are found. This human jaw was evidently a valued possession of the occupant of the grave, when alive, and, found under these conditions, it opens a wide field for speculation.

Beneath the pottery deposit were a number of fragments of sandstone, several seemingly intentionally shaped, one being in the form of a rudely-fashioned, six-pointed star. One bit of sandstone in the lot was grooved by sharpening of pointed implements, as was a small flat mass of ferruginous sandstone that lay with it.

Filling the western corner of the base of the pit was a layer of pottery vessels, badly crushed, fragments mingled together in almost inextricable confusion. These vessels had been piled one upon another to form a great deposit, and when the pit

[1] By this we do not mean the right-hand side of the observer as he stands facing the grave, but the side to the right of the skeleton as it lay. We shall employ the terms right- and left-hand in this sense throughout our descriptions of graves.

was filled no doubt were broken to some extent and were ground to pieces when the mass of earth above them commenced to settle. Among these were many cooking vessels, some large, one of which is shown in Plate XXXIX. Also with these vessels was a huge bottle, similar to others from the Haley Place, 17.7 inches in height, the neck, however, being only 3.5 inches high.

The ten arrowpoints noted as present with this burial are of black flint, slender, and each about 1.5 inch in length. They lay parallel in a little heap, their points in one direction—at least in all probability they did so, though determination as to all was not possible, as one or two were disarranged by a blow from a point of a pick, which also caused the loss of a considerable part of one of the arrowheads. An interesting feature connected with these little points is that the shanks of seven of them have small projections on two opposite sides. Of the remaining three arrowheads one is without the projections, one was interred with the shank broken, and one is that described as having been broken by the pick. A selection from this deposit is shown in Fig. 26.

FIG. 26.—Arrowheads of flint. Haley Place, Ark. (Full size.)

The two interesting, chisel-shaped, ceremonial axes found with this burial are of a rare class which we have figured and described[1] before and notably as coming from a mound on White river, Ark. Axes of this shape are sometimes found showing plainly the mark left by the grip of the handle. This mark is about two-thirds back from the cutting edge and shows the object to have been helved like an axe and not hafted like a chisel. The two specimens found with Burial No. 2 in this mound show no mark of rough usage and unquestionably were designed for ceremonial use.

BURIAL NUMBER 3.

The pit containing Burial No. 3 was 7.5 feet deep, if dug from the surface, as presumably it had been. Its limits were not exactly defined by us, it having been cut into by another grave.

The burial consisted of a skull, and then, at some distance from it, a femur out of position, two tibiæ, and fibulæ and full complement of foot bones, all correctly

[1] "Antiquities of the St. Francis, White, and Black rivers, Arkansas," p. 345. Journ. Acad. Nat. Sci. of Phila., Vol. XIV.

placed. The distance between the skull, which was that of an adult, and the heads of the tibiæ, was but 2 feet 7 inches, a distance insufficient for the intervening bones in order if the burial originally was extended. Presumably there had been some disturbance of the skeleton, though we did not succeed in tracing its cause with certainty, as the grave-pit which we have described as cutting into that of Burial No. 3, did not directly interfere with the skeleton. However, if the grave of the interfering burial (No. 4) was dug soon after that of No. 3 had been filled, it is possible that loose soil filling the pit of Burial No. 3 may have caved out with some of the bones of that burial. If this happened (and we are by no means convinced that it did) the diggers of the grave of Burial No. 4 must have returned a pottery deposit to its place and also the bones of the legs and feet without disturbing their connection by ligaments.

FIG. 27.—Bone pin. Haley Place, Ark. (Full size.)

Across the forehead of the cranium of Burial No. 3 were a number of implements of bone, with the articular parts remaining. These implements were badly decayed.

To the right of the forehead lay a small sandstone hone.

To the right of the skull were two disks of shell, undecorated and imperforate, each about 2.5 inches in diameter, and six small ornaments of the class so often found in this mound, cut from the body whorl of marine univalves, oblong and of kindred shapes, imperforate and undecorated, from 1 to 3 inches in length.

To the left of the cranium lay a large mussel-shell (*Unio*) in fragments.

Back of the skull were the remains of an object of bone, which probably had been a hair-pin (Fig. 27).

At the feet was a confusion of crushed pottery vessels, an earthenware pipe, and part of another pipe in fragments.

Somewhat farther along were four unbroken vessels.

Near the left foot was a pile of ten slender arrowpoints of flint, of different shapes, three serrated as to the lower parts of the blades. These projectile points were slightly disturbed in removal, but seemingly they lay parallel, with the points all in the same direction.

Two feet beyond the foot bones lay a handsome, flat hatchet of basanite, 5 inches in length, with the marks of the handle plainly apparent upon it. Under this hatchet was part of the stem belonging to a pipe in the pottery deposit already described.

Near the right-hand wall of the pit, about one foot from the femur, were ten

shell beads, and a little farther along was a mussel-shell in fragments, near which was a vessel, badly crushed.

Still farther along the right-hand wall, continuing toward the head of the grave, were parts of two pipes in fragments, lying parallel, the bowls in the same direction. These pipes each had only about 6 inches of stem, the other parts being missing through breakage before interment, as was clearly apparent from the appearance of the broken surfaces. It is probable that pipes of the type found in this mound, having bowl and stem in one piece, the stems, in some cases, of considerable length, were not discarded when parts of the stems were broken off, but were continued in use by the owner and later were interred with him.

Burial Number 4.

The beginning of the pit which contained Burial No. 4 was not apparent, though the pit evidently had its commencement well up in the mound. Presumably it started from the surface and, in this event, was 12.5 feet in depth, or one foot below the dark, basal layer of the mound. This grave-pit, of course, varied slightly in dimensions in its downward course. At the bottom where the burial lay, the side of the pit to the right of the skeleton was 7 feet 7 inches in length ; and that to the left was 7 feet 3 inches. Across the end of the pit nearest the skull the distance was 4 feet 2 inches, and the opposite end was 4 feet 9 inches.

The skeleton, probably of a male, was of an adult advanced in years. It lay extended on the back, the head directed almost due N. The face was turned partly to the right. None of the bones was in condition to save.

At the skull of this burial was a long bead of shell similar to others found near skulls in this mound. Its exact position in respect to the head was not determined as the spade which came upon the burial disturbed the bead.

At each side of the skull, at the ear, was an ear-ornament consisting of a disk of shell to which, centrally on one side, a boss of sheet-copper had been attached. There is a perforation in the center of each disk to allow attachment to something (probably of a perishable nature, since it was not found) which went behind the lobe of the ear.

About one foot to the left of the skull were eight flint arrowheads whose position was somewhat disarranged in removal owing to the hardness of the soil in which they lay.

At the neck had been pearls perforated as beads, a few of which, badly decayed, were recovered in company with fragments of others.

Strangely enough, no mortuary deposits lay on the chest or near the arms and hands of this burial.

At the outer side of the left knee were four arrowheads of flint.

About 10 inches from the right knee was a group of three pottery vessels, all upright.

Nine shell beads were at the right ankle and eleven were at the left.

Away from the burial and near the wall of the grave were various deposits.

At the right-hand wall, 10 inches from the northern end (that nearest the head), was a pot standing upright. At the left-hand wall, one foot from the northern end, approximately, were four pipes of earthenware, placed vertically, bowls downward, and intact. These pipes range in length between 6.5 inches and 5.3 inches. With the pipes were five flint arrowheads, disturbed in removal.

Three feet six inches from the northern end, along the left side of the grave (in line with the pelvis of the skeleton), was a deposit made up as follows: several pebbles; fragments of a bone implement, badly decayed; a number of mussel-shells (*Unio anodontoides*); a bit of sandstone; two tines of deer antler, badly decayed; three arrowheads of rock-crystal, rather carelessly made; nineteen small fragments of quartz-crystal, some with sharp edges which could have been used for cutting; a small chisel of chipped flint; a celt of quartzite, 4 inches in length; a chisel of shale, 2.4 inches long.

Five feet down the left wall of the pit was a large vessel on its side, containing two oval ornaments of shell, each about one inch in length and perforated. Near this vessel was a deposit of four arrowheads of flint. This vessel was the outer limit of a deposit of pottery filling the left corner of the base of the grave, among which were several whole vessels and a number of other vessels crushed into small fragments, which were mingled together. This deposit seemed to have been heaped in, as one vessel at least was in the soil, 13 inches above the base of the pit.

Also some distance above the base of the grave, but not in the vicinity of the pottery deposit, were encountered separately a chisel made from a flint pebble, 2.4 inches in length, and an imperforate object of shell bordering on triangular, about an inch in length, flat on one side and convex on the other.

Burial Number 5.

Burial No. 5 was a double interment. A skeleton, measuring 5 feet 3 inches as it lay, was extended on the back, the head directed S. by E. The skull, somewhat broken, was sent to the National Museum and is pronounced by Doctor Hrdlička to be that of a male.

Immediately under the thorax of this skeleton was the skull of another skeleton, crushed flat. The skeleton to which this skull belonged lay in part under the first skeleton.

The pit in which these skeletons lay could be traced to within about 4 feet from the surface and probably, like the others in the mound, it had been sunk from the summit-plateau.

From the summit of the mound to the base of the grave the distance was 14 feet 6 inches, or about 3 feet below the dark layer marking the base of the mound. The head of the grave was 6 feet 6 inches wide, and the opposite end was about the same. The two longer sides were nearly equal in length, each being about 9 feet 6 inches.

In every case of a single, complete burial found by us in this mound the skeleton lay about centrally on the base of the grave-pit, but in this instance the two skeletons had been placed well over toward the left-hand side of the pit, leaving unoccupied a considerable part of the grave, which seemingly was needlessly large.

On the skull of the upper skeleton were fragments of shell. These could not have belonged to a large bead of the kind found on some of the skulls in this mound as they were flat, and perhaps came from a mussel-shell broken by decay.

At the left side of the skull was a shell disk, covering part of which on one side were the remains of a boss of sheet-copper, evidently an ear-ornament, like others found at this place. The mate to this ornament was not discovered on the opposite side of the head, though probably it had been there and had disappeared through decay, as the one found was in a very friable condition.

About 15 inches to the left of the head was a bowl, in the bottom of which was a material found a number of times at this place and identified by Doctor Keller as being impure clay with brown organic matter.

About one foot to the left of the left shoulder was a bottle, badly broken but in part held together by the material in which it lay. Leaning against the lower part of this vessel was a fresh-water shell (*Unio plicatus*), centrally perforated for the insertion of a handle—a hoe.

At the right elbow was a bottle, crushed, as was nearly all the pottery with this burial. Near it was a minute fragment of sheet-copper. At the left wrist were two shell beads and parts of a badly decayed bone implement. The beads, which were of different sizes, were much affected by decay, and presumably other beads originally present with those found had disappeared.

At the right thigh lay fragments of an earthenware vessel, and beside the right ankle were small pebbles, evidently all that remained of a rattle. At the feet was a mass of gray material—impure clay.

In the right upper corner lay a large deposit of pottery—perhaps a dozen vessels, though this is hardly more than a guess—lying crushed into fragments in the hard clay. Vessels had been placed side by side and when crushed their parts had mingled. Examination of some of the larger fragments showed the vessels to be without decoration or, when possessing it, to have as a rule only a few rude, encircling lines around the upper parts. Three bottles unusually large were in the deposit. The remains of these, crushed into many scores of fragments and almost inextricably mingled, were preserved by us, but have not been put together as they are practically without decoration and present no novelty in form.[1] Much smaller vessels, incidentally it may be said, when thus broken and mingled, require many days of careful work to restore. With these vessels had been one containing impure clay with brown organic matter.

FIG. 28.—Arrowhead of flint. Haley Place, Ark. (Full size.)

The pottery in this grave, which presumably was placed there for the burials in common, included a large cooking vessel which contained an arrowhead of flint (Fig. 28).

Above this pottery deposit, in the clay, together, were two flat objects of shell of elliptical outline and a triangular section of shell, with rounded apex, each about 2 inches in length. These objects are of the class which we have

[1] A bottle similar to these, 17.7 inches in height, is described in connection with Burial No. 2.

described as probably being ornaments formerly attached to other objects that have disappeared.

To the right of the lower part of the burial, but not immediately with it, was a shell drinking-cup having a perforation through the beak and another near the opening, between the shoulder and the suture. Unfortunately, immediately across the opening of the cup, where a third perforation probably was, the shell has been broken by a blow of a pick. By the aid of three holes placed as described, the cup could hang horizontally. This cup, the usual *Fulgur perversum*, like others found in this mound, is neatly smoothed as to the outer surface, but bears no engraved decoration. Immediately beyond this shell lay an earthenware vessel in fragments.

In the right-hand lower corner of the grave, 13 inches above its base, however, lay a celt of silicious rock, 5 inches in length.

Burial Number 6.

The pit in which Burial No. 6 lay was distinguishable downward from about 2 feet 5 inches below the surface, where it was lost in the moist ground. The grave, 13 feet below the summit-plateau, measured, where the burial lay, 6 feet 8 inches and 7 feet 2 inches as to the sides, and 4 feet 6 inches and 4 feet 9 inches as to the ends.

The skeleton, that of an adult and probably of a male, lay at full length on the back, the head pointing SE. The skull was badly crushed, and the other bones were in equally poor condition.

Near the right knee were five pipes—or at least five bowls and stems or parts of stems—in fragments. The stems of the pipes lay along the thigh, the bowls

Fig. 29.—Arrowheads of flint. Haley Place, Ark. (Full size.)

being toward the knee. These pipes formed the lower limit of a group of objects which continued in line up along the thigh in the following order: a kitchen pot; a bottle; a kitchen vessel. These vessels were crushed to bits, as were all from this grave, with one exception.

About one foot to the left of the middle of the left thigh, together, were four flint arrowheads of interesting shape (Fig. 29), and near these was a shell object, flat,

elliptical in outline, and about .75 inch in length, belonging to the class of objects we have described as probably being fastened to other objects worn as ornaments.

FIG. 30.—Ceremonial axe. Haley Place, Ark. (Length 7.5 inches.)

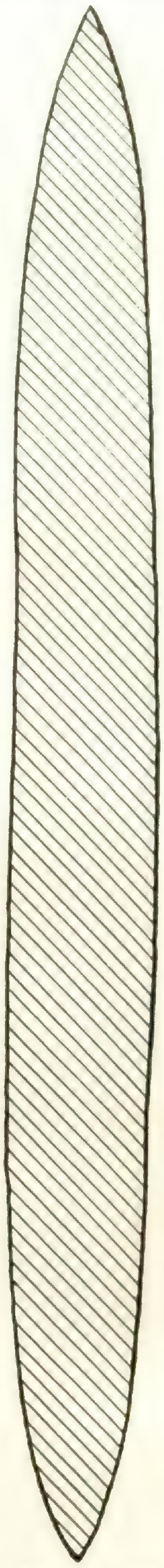

FIG. 31.—Ceremonial axe, longitudinal section. (Full size.)

At the right wrist were thirteen discoidal beads of shell, each about .25 inch in diameter.

At the right humerus was a bottle, crushed, and another at the right shoulder.

At each side of the neck was an imitation in shell of a canine tooth of a carnivore, 2.25 inches in length, perforated for suspension.

One foot from the skull lay a mussel-shell in fragments.

In the left-hand upper corner of the grave was a pipe placed vertically. This pipe was struck several times by the spade of a digger who had been instructed to remove soil above where the troweling was in progress and who carried his work too near the plane on which mortuary objects were. It is possible that other pipes with this one were crushed and thrown back by the digger, as groups of pipes placed vertically were found at several points in this mound.

A little farther down the left wall was a mass of red pigment, determined by Doctor Keller to be red oxide of iron with some lime, and a flat celt of quartzite, 5.5 inches in length. The pigment and the celt lay abreast of the left shoulder.

Farther down the left-hand side was a ceremonial axe of slate, 7.5 inches in length (Fig. 30), with a handsome, flaring, cutting edge at one end and a cutting edge also at the opposite end, which marks the specimen as a variant (shown in section in Fig. 31). The mark of the handle is plainly visible, and shows that the ends of the axe projected before and behind. This axe had been placed upright against the wall, and was on a plane somewhat above the base of the grave.

In a group of which the axe formed part were three vessels, across the opening of one of which lay a celt of basanite, 4 inches long. This hatchet had been smeared with glauconite.

Twenty-two inches from the lower end of the left-hand wall was a cooking-pot and a broken mussel-shell which probably, when whole, had served as a spoon.

In the left-hand lower corner was a mass of material identified by Doctor Keller as impure clay with brown organic matter, on which were two small, imperforate, flat, semicircular objects of shell, and a little beyond, a diamond-shaped object of shell, about 1.5 inch in length, having a perforation.

A bowl had been placed in an erect position in the right-hand lower corner of the grave, and a little farther along the right-hand wall was a mass of material similar to the one described, lying alongside of a bowl.

Burial Number 7.

The pit containing this burial, like others in the mound, could be traced into the upper few feet. It extended through the dark basal layer below to a total depth of 15.5 feet, if we assume that it commenced at the surface of the summit-plateau.

The upper and lower ends of the grave were 4.5 feet and 4 feet 1 inch, respectively. The grave, however, widened somewhat in the middle, where it was about 5 feet across. The right-hand side of the grave was 7 feet 7 inches in length, and the opposite side, 7 feet 10 inches.

Burial No. 7 was the skeleton of a powerfully built adult in the prime of life, doubtless a male. The skeleton lay at full length on the back, the head directed S. by E. The skull was crushed and the other bones were in friable fragments.

At the left of the skull, one upon the other, were remnants of two shell disks, one having two perforations near the upper margin, the other having lost through decay the corresponding part where perforations might be expected. There were no objects on the opposite side of the head. As these disks are not perforated centrally, they can hardly have been ear-ornaments.

At the neck were fifteen pearls, some nearly .5 inch in diameter and all large. With these, about 3 inches apart, were two imitations in shell of canine teeth of large carnivores, each about 3 inches in length, perforated for suspension. These ornaments were on the upper part of the thorax and probably were pendants at each side of the string of pearls.

At the right wrist were seven beads of shell, each about one inch in diameter.

Parallel with the upper part of the right thigh, at the right side of the pelvis, and over the right hand, lay a quartz crystal about 8.5 inches in length and 2.25 inches in diameter. Near this was a small disk of shell, covering part of one side of which is a boss of wood, much decayed. The shell below the wood has a green stain as through infiltration of carbonate of copper.

At the outer side of the right femur, just above the knee, was a vessel in fragments, and near it were two curious little objects of shell, one about an inch in length, the other somewhat smaller, resembling flat pins with circular heads. With these, and probably having belonged on the head of one of them, was a minute boss of sheet-copper.

At the right knee was a neat little chisel wrought from a pebble of flint and,

near it, two imperforate disks of shell, each about 1.25 inch in diameter, lying one upon the other. Four slender arrowheads of flint, the points all directed the same way, lay in a little pile at the outer side of the left tibia, just below the knee.

At the right and at the left ankles were shell beads, each about one inch in diameter, ten at each ankle.

At the head-wall of the grave, one foot from the left-hand corner, lay a cooking vessel in fragments, and about two feet farther along and one foot from the wall was an earthenware pipe (Fig. 32), the only one of earthenware found in the mound differing in general shape from the pipes so abundantly met with in it.

FIG. 32.—Pipe of earthenware. Haley Place, Ark. (Length 6 inches.)

Along the right wall, beginning about one foot from the upper corner, was a considerable deposit of objects. First came sixteen flint arrowheads, three of which were disturbed in removal. The points of the remaining thirteen were in the same direction. A selection from these is shown in Fig. 33.

Next came a deposit of four arrowheads, disturbed in removal; then three pottery vessels, crushed to fragments, one of which had been additionally wrecked by the deposit above it of two large sandstone hones, deeply grooved.

Next in order lay a shell drinking-cup wrought from a conch (*Fulgur perversum*), neatly smoothed on the exterior surface, but differing from other shell cups found in this mound in that the protuberances which are present around the periphery, or shoulder of the conch, in this instance have not been ground away.

Near the cup lay two imperforate, elliptical objects of shell, each 2 inches by 1.65 inch. Curiously enough these objects show not the slightest trace of decay, though coming from a grave in which a number of other objects of shell were greatly deteriorated.

Next, side by side, were masses of bright red pigment and of what no doubt was used as a blue-black paint. These have been determined by Doctor Keller to be respectively oxide of iron, soft and uniform, and oxide of manganese (psilomelane), impure. With these was just a trace of decaying sheet-copper.

In one of the vessels of this deposit was a quantity of the material found in many vessels in the mound, consisting of impure clay mixed with brown organic matter.

Above all this deposit, and elsewhere throughout this grave, usually somewhat above other objects, were small ornaments of shell—disks, triangles (sometimes with rounded apices) and oblong sections, and objects of elliptical outline. These ornaments are almost without exception imperforate, though two small disks have central holes and several of the other ornaments have on them traces of bitumen, showing how they were fastened to other things of a perishable character, to which they belonged. It is possible that the small, flat, circular or elliptical objects of shell (which usually were found in pairs) may have served as eyes in masks of wood.

Five inches to the right of the right tibia and continuing to the wall on the right-hand side, where it extended down to the lower corner, was a deposit made

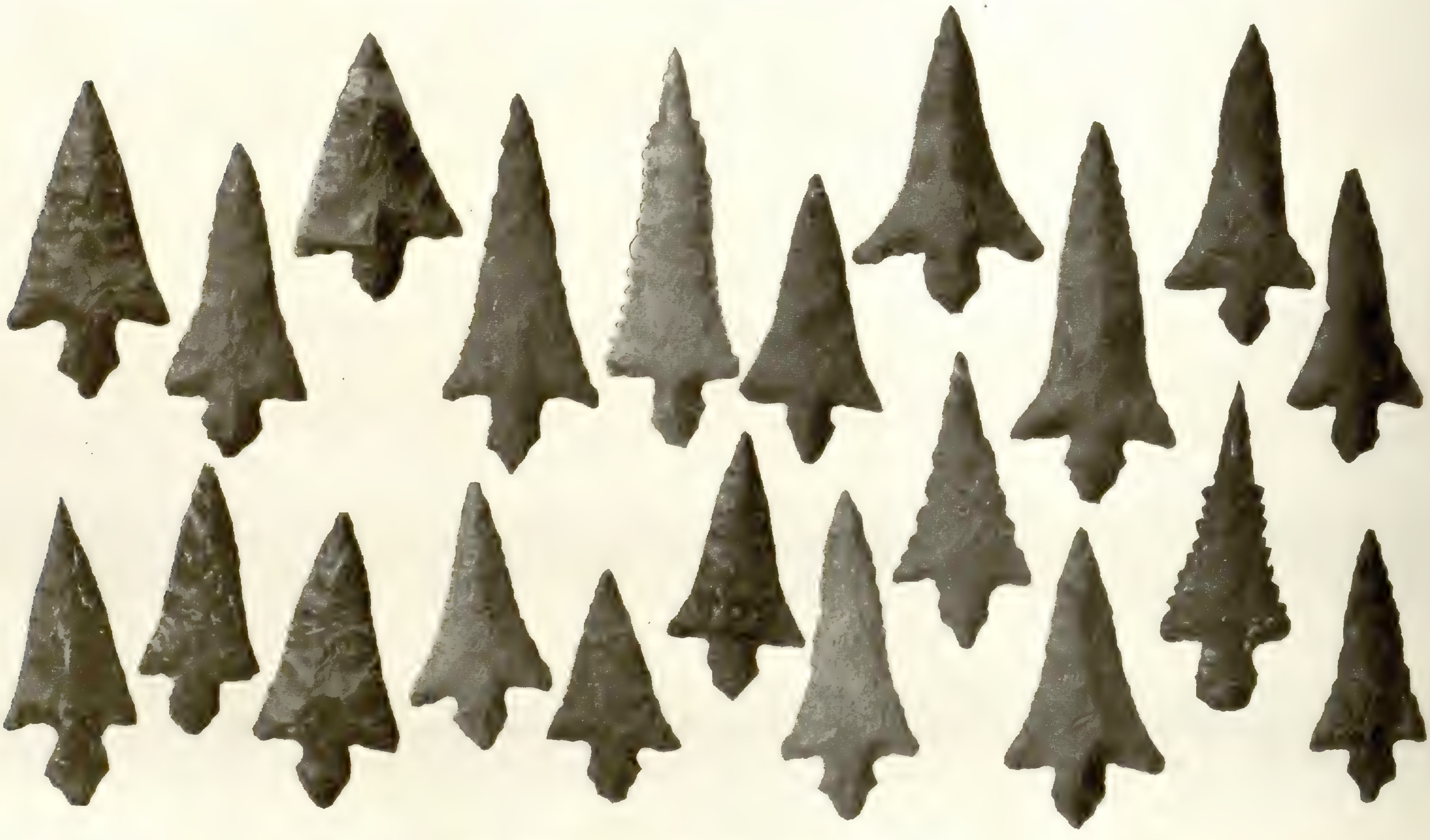

Fig. 33.—Arrowheads of flint. Haley Place, Ark. (Full size.)

up of a number of bones, badly decayed, evidently intended for the manufacture of piercing implements. With these lay a slender spearhead of flint, the point unfortunately missing, 5.75 inches in present length. A mussel-shell, badly broken, and five vessels, one of which was recovered almost entire, completed the deposit.

About midway along the left wall was a deposit containing several pottery ves-

sels, badly crushed, the fragments mingled. One of these vessels had contained another one, and in the inner vessel had been placed: a celt of porphyry, 6.5 inches long; a sandstone hone; two flint pebbles, one about the size and shape of a man's finger slightly bent; seven bone implements with rounded points, all badly decayed; a tine of deer antler.

In the soil a little above the base of the grave was the bowl of a pipe and a small part of the stem belonging to it, perhaps an accidental deposit.

Burial Number 8.

Burial No. 8 lay at a depth of 8 feet 5 inches from the surface. The head-end of the grave was 4 feet 10 inches across, and the foot-end, 5 feet 2 inches. The right and left sides were respectively 7 feet 2 inches and 6 feet 9 inches in length.

The skeleton, that of an adult in the middle period of life, lay with the skull directed S. by E. Though badly crushed, the cranium showed little evidence of decay, the lower jaw being in excellent condition. Curiously enough, when we consider the state of the skull, the rest of the skeleton was badly decayed. No bones were present down to the pelvis with the exception of distal parts of the forearms, which perhaps, owed their preservation to the presence of shell beads and the consequent reinforcing infiltration of lime. The presence of the skeleton at the pelvis and below could be traced only by decaying fragments.

On top of the skull and across it, in a flat band, were many small marine shells (*Olivella mutica*), perforated for stringing. Doubtless these had formed a head-dress of some kind.

At the right of the head were two disks of shell, similar to those described as found with Burial No. 7. With the disks with this burial were a few very small shell beads and two small objects of shell, which perhaps were fastened to the disk to form some kind of ornament.

At the right forearm was a badly-crushed vessel.

Twenty-one and nineteen shell beads were at the right and left wrists respectively.

Along the head-wall, about 3 feet from the left-hand corner, lay a vessel in fragments, and a short distance farther was a shell drinking-cup, badly decayed.

Along the left wall, 2 feet from the left upper corner, was a mass of gray material, largely clay, and about one foot farther along was a bottle in many fragments.

Along the right wall, 2 feet from the right-hand upper corner, was a kitchen vessel badly broken, though held in shape by the soil. In this vessel, placed vertically, the bowl down, was a pipe of earthenware, having a part of the stem and the mouth-piece missing, from a break previous to the time of interment.

Slightly more than four feet from the right upper corner of the grave there began, along the right wall, a deposit of pottery including at least nine vessels, two of which are entire and are the only ones so found with this burial. This deposit of vessels extended to the right-hand lower corner.

No further burials were found in the body of this mound, though our exploratory excavations radiating from the main, central one practically covered that part of the mound which lay beneath the summit-plateau.

Burial Number 9 (The Great Pit).

Numerous references have been made to a dark layer of soil about 11 feet below the summit-plateau of the mound, which we believed to mark the original surface of the ground on which the mound was built. When in the course of our main excavation this layer of soil was reached, it was noticed that about centrally in it (and consequently nearly centrally in the base of the mound also) this layer had been cut through, thus denoting the presence of a pit. As small local layers in the mound but short distances above this disturbance of the basal layer were intact, it was evident that a pit had been dug from the surface of the ground before the mound was built, and as no thin, dark layer denoting either use as a dwelling-site or decay of vegetable matter, as the case might be, lay above the upper surface of the pit, it is fair to assume that the mound, or a part of it, was reared soon after the filling of the pit.

The pit was nearly oblong, the long diameter being NNW. and SSE. The two sides were 8 feet and 8 feet 8 inches in length respectively; the ends each about 6 feet across. Through the upper part of the pit its outline was clearly defined.

After our digging in the pit had been continued from the level of the upper surface of the dark basal layer to a depth of 5 feet 7 inches, through mixed material filling the grave, which material, for a distance down, was surrounded by the red clay already described, we reached sand with a slight admixture of clay, giving but little indication of previous disturbance. However, close examination showed here and there small masses of clay, and at a depth of 7 feet 8 inches part of the lower jaw of a deer was found, showing conclusively that we were not in undisturbed, underlying soil. In this part of the pit its outline was rather indefinite as the red clay which surrounded the upper part of the pit had given place to sand.

At a depth of 12 feet below the level of the upper surface of the basal layer a human skeleton was encountered. The skeleton, that of an aged male,[1] lay at full length on the back, the head directed toward SSE. The burial, of which the cranium and a few other bones were saved in fairly good condition, rested on a dark layer about one inch in thickness, which clearly marked the bottom of the pit. This layer presumably owed its color to the decay of perishable material which had been placed upon the base of the pit at the time of the burial—skins, feather-work, wood, matting, various other fabrics, any or all. In two places on the base of the pit where deposits of objects were found, this layer of discolored soil extended upward a short distance against the sides of the grave as if some perishable objects placed on the remaining deposit had decayed there.

The objects found with this burial were fairly numerous. Near the feet was an undecorated pot of good, polished, black ware, of about two quarts capacity.

[1] See description of this skeleton, by Dr. Aleš Hrdlička, at the close of this report.

In the corner adjacent to the left foot and extending along the side was a deposit of pottery, badly crushed and mingled, in which could be distinguished the remains of a large, black bottle which had stood upright in a red pot with conspicuous handles, shown in Plate XLI. In one of the vessels was a mass of yellow material that evidently had been used as a pigment and which Doctor Keller has determined to be impure, ferruginous clay.

Under this pottery deposit lay a small heap consisting of ten arrowheads of flint of various colors, all barbed and all pointing in the same direction.

About 2 feet from the outside of the left knee of the skeleton, immediately in the pottery deposit under description, which extended along the left side of the grave, was a pipe. This pipe, of limestone, 3.25 inches in length, is an effigy of a human figure on all fours, to use a homely expression. The legs are clearly shown in relief, while the arms, undefined, merge into a single support. The most remarkable feature of this pipe, and one which none of a number of experts consulted on the subject has been able definitely to explain, is that a third leg in relief, but much smaller than is each of the other two, is seen in the rear of the figure, just below the orifice made for the reception of the stem.

From appearances one might be led to believe that a representation of childbirth with prolapse of a leg was intended. If, however, such was the case, either the incised lines which the small leg has on the ankle, in common with the larger ones, were intended simply to define the ankle, or else the aboriginal artist, perhaps in a desire to enhance the ornamental effect, put beads upon the leg of the child, as well as upon those of the adult, ignoring or not considering the natural requirements of the case.

This interesting pipe is shown in three positions in Figs. 34, 35, 36.

Carbonized material in the bowl proves the pipe to have been in use. On the base of the pipe has been incised, with a fine point, a design of some kind, perhaps a rude representation of a human figure, but, apparently through wear, the figure is too faint to determine with exactitude.

On the left side of the pit, 4 inches beyond where the pottery deposit ended, was a pile of sixteen arrowheads, all but one having the points directed down the left side of the grave. These arrowheads, all barbed, are of flint of various colors; some had been deposited with parts missing through breakage.

At both ankles were barrel-shaped beads of shell, each about one inch in length: eighteen at the right ankle, nineteen at the left ankle.

Two shell beads came from the left knee.

At the outer side of the upper part of the right femur lay a quartz crystal 7 inches in length, the point directed toward the knee of the skeleton. Beautiful crystals of quartz are numerous in the region near the Hot Springs, Ark.

Also near the right thigh were the fragments of what had been a large cooking pot of earthenware.

Near the middle of the left thigh were six arrowheads of flint of different colors, all barbed, one serrated. These projectile points were disturbed in removal so that their original position in the grave is not known.

Fig. 34.—Pipe of limestone, side view. Haley Place, Ark. (Length 3.25 inches.)

Fig. 35.—Pipe of limestone, front view.

Fig. 36.—Pipe of limestone, rear view.

Eight inches to the left of the upper part of the left femur began a deposit consisting of two pottery pipes, similar to those found in the mound proper, extending parallel—or rather parts of two pipes, as the full complement of fragments was not present. This deposit was removed carefully with a trowel, so there seems to be no chance that any parts were lost at the time of the investigation.

Near the right hand were the fragments of a small vessel of pottery, and at the right wrist were two minute shell disks with remains of copper bosses centrally placed upon them.

The right humerus bore the green stain of carbonate of copper, marking the former presence of the metal there.

At the right shoulder lay a shell drinking-cup, carefully smoothed as to the exterior surface, but without engraved decoration.

Over the left elbow lay a fresh-water mussel-shell (*Unio*), badly decayed.

At the left shoulder, the flat surfaces parallel, were two imperforate, undecorated, shell disks, each about 1.5 inch in diameter, and seven rudely-elliptical sections of shell, each 1.25 inch by .4 inch, approximately.

Along the left wall of the grave (at the risk of repetition we would remind the reader that it was that part of the grave to the left of the skeleton as it lay) was a deposit of fifteen arrowpoints, slender, like nearly all from the mound, the maximum 1.5 inch in length, eight of flint, seven of rock-crystal. A number of the projectile points in this deposit were rudely made and several were imperfect. With this deposit was a bone determined by Prof. F. A. Lucas to have belonged to a collared peccary (*Tayassu angulatum*), an animal now extinct in Arkansas.

At the neck were forty-eight pearls perforated for stringing.

At each side of the skull, at the ears, was a shell disk, 1.75 inch in diameter, having a boss of sheet-copper, centrally placed upon it (Fig. 37). Each disk has a

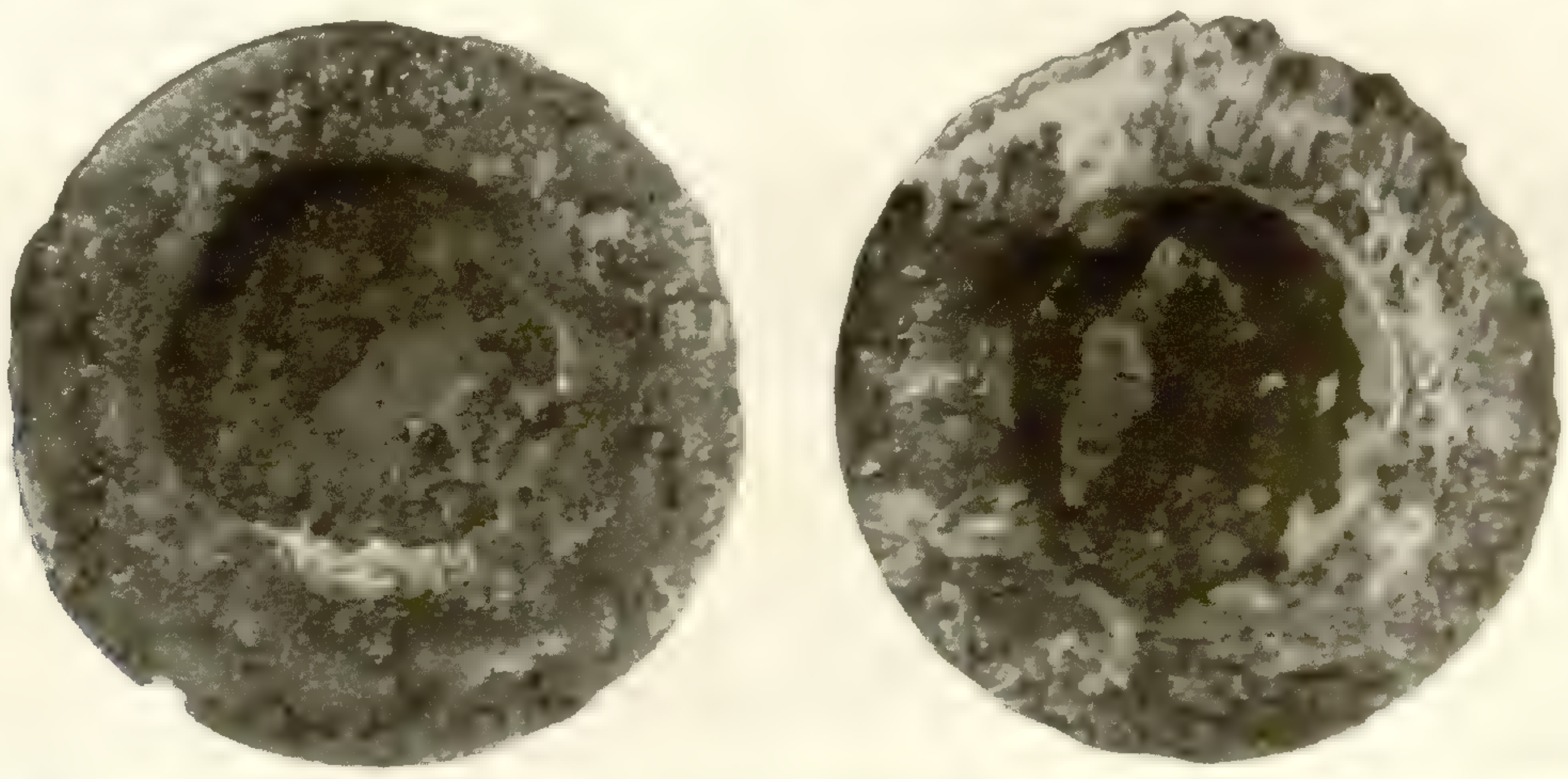

FIG. 37.—Ear-plugs of shell, with wooden bosses formerly coated with sheet-copper. Haley Place, Ark. (Full size.)

central perforation to allow of attachment to some object to be placed behind the lobe of the ear, in this case made of perishable material.

Transversely on top of the skull was a shell bead, 3 inches in length, similar to two found on burials in the mound proper.

Eighteen inches to the right of the skull a group of earthenware vessels had been placed, two of which, small, undecorated pots, were intact, the remaining ves-

sels being badly crushed. With this deposit was a mass of purple pigment, about the size of a cocoanut, which Doctor Keller has proved to be oxide of iron that had been subjected to heat, thus changing it from the original red. Presumably this change was wrought intentionally and not through accident, as we have explained in connection with similar material found with Burial No. 2. Nothing else with the burial had been exposed to fire.

About one foot beyond the skull, toward the head of the grave, was a banner-stone of the "butterfly" pattern, made from rock-crystal. One wing has been broken in former times and the area of fracture carefully smoothed to allow the continued use of the ornament (Fig. 38).

FIG. 38.—Part of banner-stone of crystal. Haley Place, Ark. (Full size.)

It is interesting to note in this connection that we found in a mound at Thornhill Lake, Volusia County, Florida, two pendent ornaments, each made from the wing of a banner-stone.[1] Our late friend, Andrew E. Douglass, Esq., first called our attention to the origin of these ornaments and informed us he had found a similar one in a mound on Tomoka Creek, about thirty-six miles north of Thornhill Lake.

With this ornament and extending 18 inches above the level of the head of the grave was a group of objects as follows: two quartz crystals, each about 3.5 inches in length; a mussel-shell (*Unio purpuratus*); a small amount of red pigment; a pebble; a bone piercing implement, badly decayed; remnants of a rattle of shell (tortoise or turtle) with numerous pebbles still adhering, and one part pierced, probably for suspension; two alligator teeth, each about 3 inches in length and each pierced at the proximal end to serve as a pendant.

In the upper left-hand corner of the grave was a deposit of pipes of earthenware, of the kind of which so many were found in the body of the mound. These pipes, four in number, were all somewhat broken, one being badly crushed. Two of the pipes had been interred without the proximal ends of the pottery stems. With this deposit of pipes were: a celt of quartzite, 5 inches in length; a small chisel; an arrowhead of flint; a bone implement, very badly decayed.

Near this deposit, but farther down the left side of the grave, were three earthenware pipes together, placed vertically, the bowls downward. One, 6 inches in length, has all parts present, but the proximal ends of the other two are missing. This deposit, like all objects in this grave, was carefully removed with a trowel so that the chance of loss of any parts of the pipes in removal may be regarded as negligible.

The pottery vessels from this grave were disappointing. One might fairly

[1] "Certain Sand Mounds of the St. Johns River, Florida," Part II, pp. 168, 170.

assume that the personage honored by the erection of this mound (and there seems little reason to doubt that such was the intention of the builders) would have been favored with the best earthenware the place afforded, but the vessels deposited with this burial were mainly of the kitchen variety, while nearly all the rest were without striking decoration.

We here close the account of the individual burials.

As stated, but one kind of pipe of earthenware (with a single exception) was found at the Haley Place, though, as we have seen, a considerable number of pipes were unearthed there.

The pipes in question, with bowl and stem of one piece and ranging in length between 5.5 and 22.6 inches, have bowls resembling inverted, truncated cones placed on the stems (which are circular in transverse section), some distance from the terminations of the stems, which extend beyond the bowls. These projecting parts are invariably hollow and would serve as receptacles for undesirable liquid material derived from the smoking of tobacco or other plants, though we have no knowledge that the ends were made hollow for that purpose.

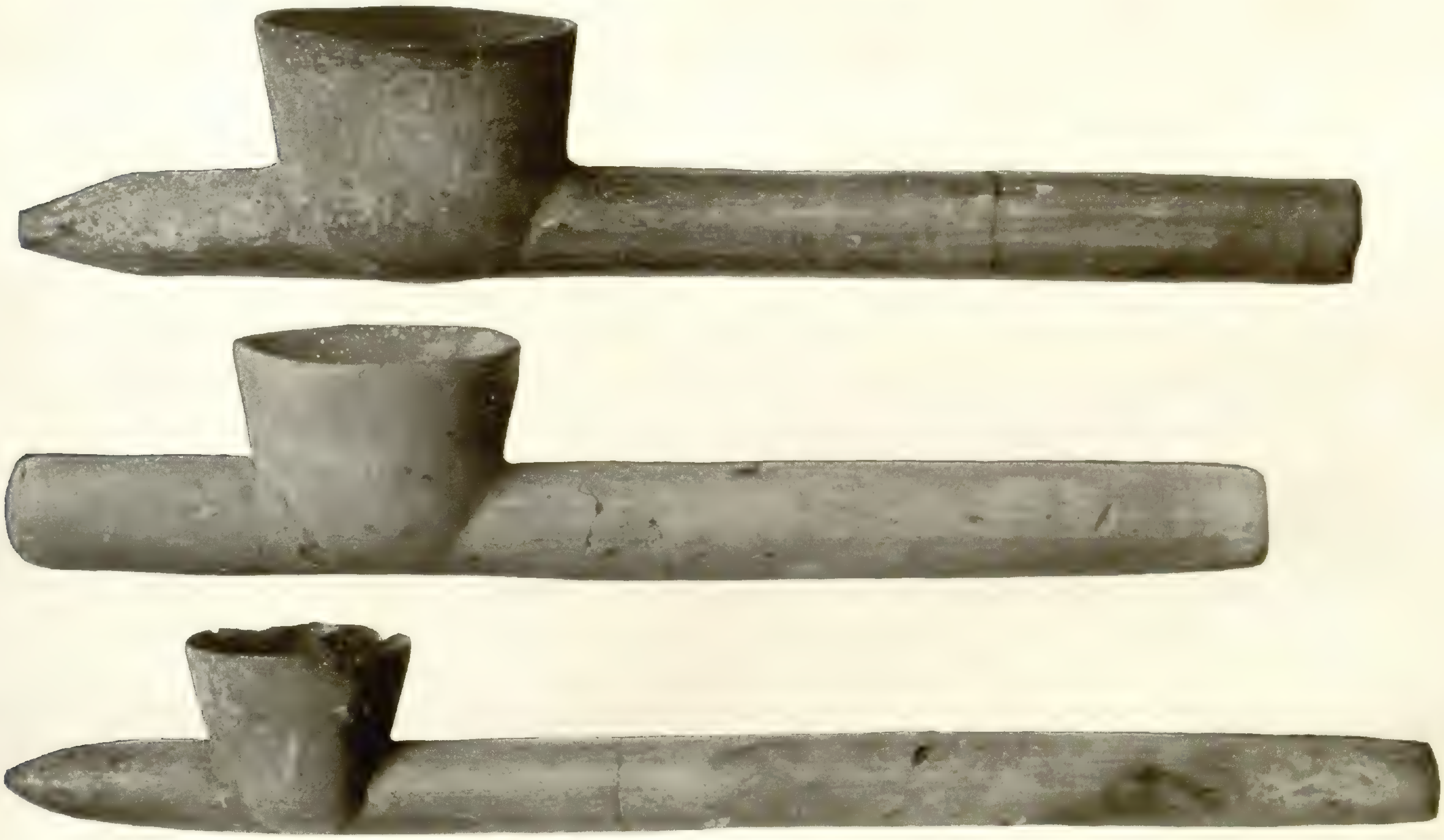

Fig. 39.—Pipes of earthenware. Haley Place, Ark. (The two upper ones are full size; the lower one is 9.3 inches in length.)

These projecting parts, which probably bring the pipes within the class known as "monitor," terminate in three ways: in points; in blunt points; or flat, the end having little or no diminution in the diameter of the stem, as shown in Fig. 39.

The ends of the stems destined for the mouth are not diminished in diameter

in any way, but their annular margins are neatly rounded when the pipe is complete. As we have noted, however, some pipes were found having instead of a smoothed end for the mouth, a rough, broken surface. Such pipes were sometimes found apart from any fragments, and, as we have already had occasion to point out in this report, it is evident that the aborigines who formerly inhabited the Haley Place site, continued the use of pipes after parts of the stems had been broken off. As we all know, the same thing is sometimes done under like circumstances at the present time.

In a number of cases, pipes from the Haley Place, from which parts of the stems have been broken, show more or less careful chipping around the margins of the breaks, doubtless to make the broken surfaces more convenient for further service.

Many of the bowls of these pipes from the Haley Place contain coatings of carbonized material, while, on the other hand, a considerable number evidently never have been used.

We believe this form of pipe to be new in connection with the aborigines. At all events an aboriginal pipe of earthenware, all of one piece, nearly 23 inches in length, is something unheard of before.

We are unable to give the number of vessels represented by the masses of fragmentary and mingled sherds found during our investigation of this interesting mound, or even to form an estimate which would in any way approach the exact number. As we have seen, the vessels in most instances had been placed in deposits together, and when the earth above them commenced to settle, they were ground to fragments and the fragments were mingled. Never before in all our mound investigation have we seen such wreckage of earthenware. The vessels from this place, in consequence, were not numbered as they were removed from the ground, as it has been our invariable custom to do before, but the more interesting ones have been arbitrarily numbered since the reunion of their parts—which reunion was in some instances a formidable task.

While many interesting vessels came from this place, there are many others bearing almost no decoration, three encircling lines below the neck having been considered sufficient decoration for most of the bottles, while many bowls, though of good ware, bear but little ornamentation. Many cooking vessels also were found, the decoration of most of which, while abundant, offers but little variety.

We shall now consider some of the more interesting vessels from this place.

Vessel No. 1. (Burial No. 2.) This bottle (Plate XXXVII), in the combination of its coloring, white (probably kaolin) and black which is hardly more than a stain, and of the designs of its decoration—crosses, circles, many-pointed stars—is totally dissimilar from any vessels from Arkansas we have seen or of which we have heard. Presumably it is an importation from southeastern Missouri, some bottles from which region it greatly resembles. A depression surrounds the union of the neck with the body.

Vessel No. 14. (Burial No. 2.) This bottle (Fig. 40) bears incised decoration which can be more clearly seen in the illustration than described by us. The line-work has been filled in with red.

HALEY PLACE, ARKANSAS, VESSEL NO. 1 (BURIAL NO. 2). (HEIGHT, 7.4 INCHES.)

Cockayne, Boston

FIG. 48. Vessel No. 14. Burial No. 2. Haley Place, Ark. (Height 7.2 inches.)

FIG. 41.—Vessel No. 17. Burial No. 2. Haley Place, Ark. (Height 7 inches.)

HALEY PLACE, ARKANSAS, VESSEL NO. 5 (BURIAL NO. 2). (HEIGHT, 9.8 INCHES.)

Cockayne, Boston

HALEY PLACE, ARKANSAS, VESSEL NO. 11 (BURIAL NO. 2). (HEIGHT, 10.8 INCHES.)

Cockayne, Boston

Vessel No. 17. (Burial No. 2.) In Fig. 41 is shown a bottle having incised decoration including the scroll and other designs met with in this region.

Vessel No. 5. (Burial No. 2.) This vessel, shown in Plate XXXVIII, is of black ware giving evidence of an attempt at polish. The decoration, incised and punctate, has at one time been filled in with white pigment. The handles, almost solid, have slender, vertical perforations. Another vessel, also found with Burial No. 2, is similar to this one as to size, shape, and decoration with the exception that the line and punctate work has been filled in with red instead of with white pigment.

Vessel No. 4. (Burial No. 2.) This bowl (Fig. 42) of excellent black ware, has a neatly-made, incised and punctate decoration made up of two similar designs, one appearing on each side of the bowl.

Fig. 42.—Vessel No. 4. Burial No. 2. Haley Place, Ark. (Diam. 6.8 inches.)

Vessel No. 8. (Burial No. 2.) This interesting vessel (Fig. 43) is a fair example of some of the better class of those used for culinary purposes by the aborigines who occupied this site, and illustrates the care bestowed by them on the shaping and decoration of some of these vessels. On the body, in relief, are conventional representations of the cords with the aid of which doubtless the vessel was suspended. It is hardly likely the handles served a utilitarian purpose.

Vessel No. 11. (Burial No. 2.) The cooking-vessel shown in Plate XXXIX is one of the best of its class found at this site and shows even more care in its construction than the one just under description.

Vessel No. 16. (Burial No. 2.) This great bottle, 17.7 inches in height, of which but 3.3 inches is the length of the neck, has been referred to in the account of this burial. The ware is black, the body ovoid, flattened at the base. The sole decoration consists of three incised, concentric, encircling lines around the body just below its union with the neck. Projecting from the outer circle are the markings seen on some sun-symbols on pottery from this region. A considerable number of bottles of about this size and shape were found at this place, some of which, in fragments, with a great many other vessels also in fragments, have been presented by us to Peabody Museum, Cambridge, Mass.

FIG. 43.—Vessel No. 8. Burial No. 2. Haley Place, Ark. (Height 8.7 inches.)

FIG. 44.—Vessel No. 4. Burial No. 3. Haley Place, Ark. (Height 7.4 inches.)

Vessel No. 4. (Burial No. 3.) Of this bottle, shown in Fig. 44, it may be said, as of some of those from the preceding burial, that its decoration is more

readily understood from view than from verbal description. This decoration, which includes sun-symbols, has been filled with red pigment.

Vessel No. 7. (Burial No. 3.) This bottle, quadrilateral with four equidistant projecting parts, is covered as to the body with incised sun-symbols, the line-work of which has been filled in with red (Fig. 45).

Fig. 45.—Vessel No. 7. Burial No. 3. Haley Place, Ark. (Height 6.5 inches.)

Vessel No. 5. (Burial No. 3.) This bowl of yellow ware, bears by way of decoration over the outer surface, a number of rudely-made knobs. In addition, is a representation of a cord, no doubt arranged in a way in which vessels probably often were suspended. There are perforations below the rim on two opposite sides of the bowl (Fig. 46).

Vessel No. 2. (Burial No. 3.) This bottle (Plate XL) of fine, black, polished ware, is a striking example of the best work in pottery found in this region. The incised decoration, beautifully executed, based largely on the scroll, has been filled in with white pigment, much of which remains and greatly enhances the general effect.

Fig. 46.—Vessel No. 5. Burial No. 3. Haley Place, Ark. (Height 4 inches.)

HALEY PLACE, ARKANSAS, VESSEL NO. 2 (BURIAL NO. 3). (HEIGHT, 9.[illegible] INCHES.)

Cockayne, Boston

FIG. 47.—Vessel No. 2. Burial No. 4. Haley Place, Ark. (Height 8.1 inches.)

FIG. 48.—Vessel No. 5. Burial No. 4. Haley Place, Ark. (Height 4.2 inches.)

Vessel No. 2. (Burial No. 4.) This bottle (Fig. 47) has a neck of a kind often met with along Red river in Arkansas, which tapers slightly upward. Below the union of the neck and body are three incised, encircling lines—a favorite decoration in this region. On three sides, in relief, presumably are representations of cords, showing the manner in which the bottle was suspended for use.

Vessel No. 5. (Burial No. 4.) This pot of rather common ware, having two holes for suspension, has a coarse, incised and punctate decoration showing traces of red pigment of which, however, but little remains (Fig. 48).

Vessel No. 8. (Burial No. 4). This fine bowl (Fig. 49), found in a multitude of fragments, has been pieced together with considerable success. The decoration, incised, consists of a pattern six times shown on the upper part of the body. Below the flaring rim, on the outside are four encircling lines in which white pigment can be distinguished in places.

Vessel No. 11. (Burial No. 4.) This bowl which has slight incised and

FIG. 49.—Vessel No. 8. Burial No. 4. Haley Place, Ark. (Diam. 12.2 inches.)

punctate decoration exteriorly, though it is not shown in the illustration (Fig. 50), has as a principal feature, projections radiating horizontally from the margin such as sometimes are shown on symbols of the sun, incised on pottery from this region. The ware is black and has some polish.

FIG. 50.—Vessel No. 11. Burial No. 4. Haley Place, Ark. (Diam. 7 inches.)

Vessel No. 1. (Burial No. 5.) In Fig. 51 is shown another cooking-vessel of the same class as others from this site, already described and illustrated.

Vessel No. 6. (Burial No. 6.) This bowl (Fig. 52) coated inside and out with a dull red pigment, has, in addition, on the upper part, rather rude, incised decoration. As the reader is aware, incised decoration in conjunction with the use of coatings of pigment, is most unusual north of the Arkansas river, though found in regions to the south of it, including that under description in this report. A bowl similar to this one but smaller, came from this site.

Vessel No. 4. (Burial No. 6.) In Fig. 53 is shown a large cooking-vessel differing in minor details from others from this site.

Vessel No. 6. (Burial No. 7.) This vessel of yellow ware (Fig. 54) has incised and punctate decoration based on the circle and scroll. The base is flat as are the bases of so many vessels from this region.

Vessel No. 2. (Burial No. 7.) A bottle 8.4 inches in height, having by way of decoration a design so frequently met with in this region and too often, unfortunately, with no other in conjunction, namely, three encircling, parallel lines, which, in the case of bottles, are incised below the union of the neck with the body. The base is flat; the ware has considerable polish.

Vessel No. 4. (Burial No. 8.) This bottle (Fig. 55) is decorated with two sets of concentric circles, each set surrounding a cross of the four directions. Some of the circles, incised, are filled in with punctate markings.

Vessel No. 5. (Burial No. 8.) The vessel shown in Fig. 56, a platter, perhaps

FIG. 51.—Vessel No. 1. Burial No. 5. Haley Place, Ark. (Height 10.4 inches.)

HALEY PLACE, ARKANSAS, VESSEL NO. 10 (BURIAL NO. 9). (HEIGHT, 9.3 INCHES.)

Cockayne, Boston

represents some quadruped, though the designs which may be intended to indicate legs are not regularly placed, possibly, however, through lack of skill in spacing.

Vessel No. 3. (Burial No. 9.) In Fig. 57 is shown another of the considerable number of cooking-vessels found at this site.

Vessel No. 10. (Burial No. 9.) This vessel (Plate XLI), coated with red pigment inside and out, has in addition on the upper part of the body an incised design in conjunction with bosses. Large handles add to the general effect of the vessel.

FIG. 52.—Vessel No. 6. Burial No. 6. Haley Place, Ark. (Diam. 9.7 inches.)

In several respects the mound on the Haley Place is notable, and in one respect—the depth of some of its grave-pits—is the most remarkable one it has been our fortune to investigate. As stated in the Introduction to this report, mounds that have been built high above burials are common enough, but the making of pits of such depth as were some of those in the mound at the Haley Place, with the means at the disposal of the aborigines, must have been a very difficult task, and if the earth at the time of their work was as thoroughly dry and hard as we found it to be, the difficulty of their achievement must have been greatly increased.

There is another interesting feature connected with this mound. With the exception of one grave that cut slightly into another, there was no interference between the graves. One who has had to do with the investigation of aboriginal places of burial knows how common an occurrence it is to find grave cutting through grave, and one can almost believe, in the absence of this in the mound at the Haley Place, that it was not only erected in honor of the occupant of the great pit below the mound, but that the burials whose graves were dug through the mound, or through parts of it (all probably persons of note, for who ever heard before of such numerous deposits with all the burials in a mound?), were made soon after the erection of the mound when the reason for its construction was still fresh in the minds of men. Not only, as we have said, did the graves not interfere one with

FIG. 53.—Vessel No. 4. Burial No. 6. Haley Place, Ark. (Height 7.4 inches.)

another, but no interment was made in the central part of the mound—and that part almost surely would have been selected for graves under ordinary circumstances.

It is to be regretted that the demolition of this mound is out of the question, even though our trenches radiating from the sides of the main excavation made, as we have noted, the existence of any undiscovered grave in that part of the mound under the summit-plateau almost an impossibility. The mounds at the Haley Place, however, are a valuable asset as a place of refuge in times of high water; in fact they did good service in the flood of 1908, and no doubt were again made use of in the still greater flood of 1912, shortly after our investigation terminated. In

FIG. 54.—Vessel No. 6. Burial No. 7. Haley Place, Ark. (Height 5 inches.)

FIG. 55.—Vessel No. 4. Burial No. 8. Haley Place, Ark. (Height 6.4 inches.)

view of the great need for the mounds, not only could their demolition not be permitted, but permission for the investigation as carried on by us was an act of marked courtesy.

Doubtless a cemetery exists in the level ground on the Haley Place, but all signs of it have been covered by deposits from various floods. Careful digging was done in three places where rises above the level ground were noted, but although evidence of aboriginal occupancy was present in all these places, numerous trial-holes failed to reveal any signs of burial.

About 1.5 mile back from the Haley Place are two mounds which were visited

by a member of our party. On one of the mounds are two houses, and a building is on the other one. Furthermore the mounds are used as sites for apiaries, and the bees, active at the time of our visit, were reported as likely to resent the intrusion of strangers. The investigation of these mounds was not urged by us.

Fig. 56.—Vessel No. 5. Burial No. 8. Haley Place, Ark. (Length 11.3 inches.)

Mounds near Red Lake, Lafayette County, Ark.

Red Lake is a former course of Red river. About half a mile in from the river, on the farther side of the "lake," is some swamp land in the process of clearing at the time of our visit. On this property, near together, are two low mounds of irregularly, circular outline, which were visited by us. We could not determine the nature of these rises, whether aboriginal mounds or remnants of ridges partly washed away by water. We were unable to obtain permission to investigate at this place, as the property was in process of sale and no one seemed authorized to act.

FIG. 57.—Vessel No. 3. Burial No. 9. Haley Place, Ark. (Height 13.7 inches.)

Mounds on the Williams Place, Lafayette County, Ark.

On the border of the Williams Place, which is about one mile in from the river, are three mounds, two in woods and one bordering the woods but in a cultivated field. These mounds, all in sight of one another, are variously from 3 to 5 feet in height. Their bases are irregular in outline, but circular in the main. The two largest mounds have been dug into centrally to a considerable extent. The owner of this property did not seem inclined to grant permission to investigate, and as the mounds (which we visited) were of little promise because of their imperfect condition, the matter was not urged.

Mounds on the Egypt Place, Lafayette County, Ark.

On the Egypt Place, a plantation about one mile back from the river, are two mounds which were visited by our agent. The place has a reputation for the discovery of aboriginal relics. The owner, however, refused us permission to investigate.

The Battle Place, Lafayette County, Ark.

The Battle Place, which takes its name from that of a former owner and not from having been the scene of a conflict, is one of numerous properties belonging to Mr. Henry Moore, Jr., of Texarkana, Ark., which kindly were placed at our disposal by him. This plantation has a considerable reputation as a site where relics of the aborigines have been unearthed by the plow.

The plantation does not border the river but lies about one mile back from it, near Battle Lake, a former course of Red river, no doubt, which was itself the river when the aborigines occupied the site.

A short distance from Battle Lake is a large mound of peculiar shape. This mound, extending N. and S. has a basal length of 592 feet. Beginning at the southern end, the upper surface of the mound is outlined by a series of levels and slopes, some of the latter very steep, others less so. From the general level at the southern end three slopes and two plateaus carry the mound to a third plateau, where it attains a maximum height of 33 feet. From this plateau, a descent, another plateau, and a slope bring the mound to the surrounding territory on the north.

The basal width of that part of the mound which is under the main plateau is 157 feet, which includes that of a roadway extending up the eastern part of the mound, from south to north.

The width of the mound contracts materially in proportion to the proximity to the ends. The width of the main plateau is 28 feet; the height of the southernmost plateau is slightly more than 10 feet.

A number of trial-holes dug into various parts of the great mound were without return except the finding of a flint pebble on which a cutting edge had been carefully ground, though no additional work had been done on the pebble.

To the eastern side of the great mound is a cultivated field in which, in full view from the mound, were four low humps and rises of the ground that long culti-

vation evidently had considerably spread. The surface of the field showed in places bits of flint, pebbles, fragments of pottery, and in one instance, parts of a human skull were found. Several arrowheads also were picked up on the surface. The field is clay, probably a river deposit, under which is sand with some clay intermingled.

The four rises of the ground were all carefully investigated and, in addition, a number of places in the field were dug into, which, though level, had scattered over them debris which invited investigation. Also a low mound to the SW. of the great mound was carefully dug through. The only place where our search was rewarded was in one of the rises, which was of little appreciable height,—perhaps one foot in some places and less in others,—and had no determinable boundaries. A space in it, located as nearly centrally as we could judge, having a diameter of about 50 feet, was carefully investigated and five burials were found in it, ranging in depth between 1 foot and 2 feet 6 inches.

Three of these burials were of adults extended on the back, and one probably was an aboriginal disturbance. This last burial consisted of the skull of an adult with the lower jaw, and in the neighborhood were two other mandibles. Somewhat farther in and deeper was another skull.

Burial No. 2, that of an adult, had been disturbed by the digging of a grave for Burial No. 1 and thereby had lost the skull. The remainder of the skeleton was intact. Near the upper end of the skeleton were two skulls of adults, in fragments. One of these skulls probably belonged to the skeleton.

Burial No. 5, that of an adult, had an additional skull lying near it.

Of the three extended skeletons, one headed north and the skulls of two were directed toward the south. All the skeletal remains in this mound were too much decayed for preservation.

With the exception of a decaying columella of a marine shell, which lay near one of the skeletons, nothing except pottery remained with them, but of this each had an ample allowance.

Thirty-five vessels, most of them broken, and many scattered fragments of earthenware came from this little mound, two of the vessels being found apart from burials.

Some of the vessels were interestingly placed. Burial No. 1, adult, had at the inner side of the left foot and leg, and extending over the right foot and leg, a group of seven vessels, six upright, one inverted. At the outer side of the right forearm was another vessel, and still another at the right elbow. The slight separation of the legs of this skeleton to permit the placing of vessels between them, was an interesting feature.

Burial No. 3, a child, had grouped over the head, six vessels, the head being centrally beneath them.

The earthenware from the Battle Place (with the exception of the cooking vessels) is of excellent quality, thin and some of it polished. The vessels are symmetrical, and nearly all, even the cooking pots, bear much incised decoration,

though that on the vessels used for culinary purposes is, of course, inferior to the rest. There is comparatively little variety in shape or in decoration, however. Red pigment is in much of the line-work. Some designs are partly in interrupted lines, a specialty of this region.

FIG. 58.—Vessel No. 26. Battle Place, Ark. (Height 6.5 inches.)

The following are the most interesting vessels from this place:

Vessels Nos. 26 and 30. The bottles shown in Figs. 58, 59, respectively, are of excellent ware, of graceful form and bear incised designs mainly based on the circle and on the scroll. The line-work has been filled in with red pigment. The

swelling seen in the neck of each vessel denotes a compound form and is a conventionalized representation of a cup imposed on the opening of the bottle. Bottles

FIG. 59.—Vessel No. 30. Battle Place, Ark. (Height 7.3 inches.)

similar to these are found farther to the eastward, in Louisiana near the junction of Bayou Bartholomew with the Ouachita river, though red pigment is absent from the line decoration in the Ouachita region.

Vessel No. 33. In Fig. 60 is shown a very interesting bottle and like the two just described, compound in form though in this instance we have an additional feature. On a bowl a bottle is represented and this bottle has for a neck a conventionalized cup.

Vessel No. 10. In Fig. 61 is shown a vessel presenting on the sides four

Fig. 60.—Vessel No. 33. Battle Place, Ark. (Height 6.3 inches.)

equidistant projections each surrounded by concentric circles very carefully incised. Spaces above and below are filled with series of parallel lines.

Vessel No. 19. This bowl, showing as decoration four similar designs made

up of scrolls and circles, the designs separated by parallel lines, has traces of white pigment still in places in the line-work (Fig. 62).

FIG. 61.—Vessel No. 10. Battle Place, Ark. (Height 3.3 inches.)

FIG. 62.—Vessel No. 19. Battle Place, Ark. (Diam. 4.7 inches.)

Vessel No. 13. This bowl of black ware (Fig. 63) is covered exteriorly (with the exception of a small circle forming the base) with incised decoration rather

unevenly done, principally based on the current scroll and circles. Red pigment, with which all the line-work has been filled, still remains in fairly good condition.

Vessel No. 6. This bowl bears an incised decoration chiefly consisting of circles and spaces with reticulate lines. In all the line-work are traces of red coloring material (Fig. 64).

FIG. 63.—Vessel No. 13. Battle Place, Ark. (Diam. 6 inches.)

Vessel No. 12. In Fig. 65 is shown a bowl with the rudely-modeled head of a bird, projecting from one side. Vessels of this class are about as near to the life-form as was attained by the aboriginal potters inhabiting that part of Red river running through Arkansas. On the conventional tail is a curious figure we are unable to explain.

FIG. 64.—Vessel No. 6. Battle Place, Ark. (Diam. 5 inches.)

Vessel No. 9. A bottle 3.1 inches in height, with swelling neck indicating a compound form. The decoration, incised, is made up of partly interlocked scrolls. The base is flat.

Vessel No. 11. A bottle 3.6 inches in height, of black ware showing considerable polish. The decoration consists of current scrolls and circles, the ground being filled in with reticulate lines. The incised work on this bottle is still filled in with a brilliant red pigment having an unusual degree of intensity. Unfortunately, the neck of this bottle had been carried away by previous disturbance of the mound, but as the bottle, in ornamentation, shape and size greatly resembles Vessel No. 9 (whose description just precedes this one), the neck has been restored in imitation of that on Vessel No. 9.

In sight of the great mound, to the north of it, is a cultivated ground which is unusually black, and has considerable debris of aboriginal dwelling-sites on the surface. There is history of bones and of artifacts plowed up at this place. Probably, however, most of the burials that formerly were there have been removed in the course of cultivation, as fifteen trial-holes resulted in the discovery of but one burial (Number 6), the skeleton of an adult extended on the back, the head directed to the east. This burial was unaccompanied by artifacts. A neatly-made hatchet unearthed at this place was given by us to Mr. Moore, the owner of the plantation.

FIG. 65.—Vessel No. 12. Battle Place, Ark. (Height of bowl 2.4 inches.)

Adjoining the Battle Place is the Harrell Place, where, in the past, it is said, aboriginal artifacts have been exposed by the plow. The spot where these discoveries had been made,—level ground strewn with debris of an aboriginal site,—was dug into by us without success, though eight arrowpoints of flint, some slender and delicately made, were picked up on the surface.

About 3 miles above the Battle Place, on the same side of the river, is the Cabinas Place. Here, near the present course of the river, it is said that workers, while engaged with scoop-shovels drawn by horses, in the construction of a levee, unearthed at one place skeletons and a number of earthenware vessels.

We examined some vessels which Mr. Cabinas, the owner of the property, told us were a part of those found on his place. These vessels resemble some from the Battle Place.

We carefully investigated the spot where the pottery is said to have been found, and where many fragments of pottery and of human bones lay on the surface, but were unable to come upon human burials in a considerable amount of digging. Presumably the cemetery had been a small one and the makers of the levee destroyed all the human remains there were in it.

A skeleton, however, was found by us,—probably that of a dog, judging from the size and general appearance,—which fell into fragments on removal. The skeleton lay in a shallow grave, and on the skull was a large fragment of pottery.

Mounds on the McClure Place, Miller County, Ark.

The McClure Place, several miles below the town of Garland, is the property of Mr. Dan W. McClure, who resides upon it.

About one-quarter mile in a straight line SW. from the landing at the McClure plantation, in a cultivated field, are two mounds, both of which have been plowed over for a considerable time and no doubt have lost some of their height through cultivation.

On the surface of both these mounds, which Mr. McClure informed us were not submerged in the great flood of 1908, were fragments of flint and bits of pottery.

One of these mounds, which is but a short distance from the other, resembles somewhat a small ridge extending N. and S., with a slight increase in height near the ends. The southern end, the greater in height, has a rise of 1 foot 3 inches. The length of the mound is somewhat in excess of 100 feet; its width is from 40 to 45 feet.

The mound, which is composed of sand with some clay intermingled, was fairly riddled with trial-holes by us, and to an extent that it is almost inconceivable that a skeleton in it can have escaped discovery. Two burials were discovered, one in about the highest part of the southern end, and one similarly situated in the northern end.

Burial No. 1 (in the southern extremity), a child, 14 inches below the surface, had a small bottle at the right of the skull. At the outer side of the left forearm was a bowl, and another bowl lay at the upper part of the left femur, having been placed upright above another vessel. Three of these vessels were small and evidently were intended for a child, while one was of moderate size. All were more or less broken. A mussel-shell was at the right of the right knee.

Burial No. 2, adult, probably a woman, lay extended on the back, the head directed S. by W. The depth was 3 feet 8 inches, though no pit was apparent, save that the burial lay in light sand which underlies the soil at this place and of course the burial must have been placed in an excavation made for it. This skeleton, which was in excellent condition and which was saved almost entire, was richly endowed with mortuary deposits in the shape of vessels of earthenware, which, however, when recovered by us, were nearly all badly crushed. At the outer side of the left shoulder was a vessel, and two others were at the outer side of the left forearm. A small bowl had been turned over the right hand and contained the bones of

it when removed from the soil. At the outer side of the middle of the right femur were some decaying bones of a small fish. At the upper part of the left femur was a badly-broken vessel, and a cooking-pot had been placed at the lower part of the same bone. Beneath this vessel was another in fragments. A small vessel lay between the knees, and a vessel badly crushed was at the left tibia. At the outer side of the right ankle was a bowl having the head of a bird, rudely represented, rising perpendicularly from the margin, and a conventional tail on the opposite side—a poor example of a type common in regions to the eastward. Also at the right ankle, and extending to the foot, were a small bottle and a rude kitchen vessel. At the inner side of the middle of the left femur, a mussel-shell (*Unio hydianus*) had been placed.

The vessels from the two burials in this mound (Nos. 1 to 16, inclusive) present no striking feature. The decoration, except in the case of kitchen vessels, is trailed rather than incised.

The remaining mound at this place was 3.5 feet in height, though the stump of a tree upon it showed the mound had lost at least one foot in altitude in recent times, presumably by wash of rain after the clayey sand, of which the mound was composed, had been loosened by cultivation. The base, which was irregularly circular, was 70 feet in diameter.

This mound, like its neighbor, was so filled with trial-holes by us, some of which extended into one another, that it is hardly likely that any burial in it remained undiscovered. Two burials were found near together in the central part of the mound.

Burial No. 3, the skeleton of an adult, probably male, extended on the back, the head pointing S., lay at a depth of 3 feet 8 inches. We were unable to trace a pit from the surface down, but the lower 16 inches of the grave had been filled in with mixed material and evidently to that extent, at least, the burial had been let into the mound.

At the outer side of the right humerus was a vessel which, like one similarly placed at the left humerus, was badly crushed. At the right forearm was a bottle, and at the left wrist were some bones which Prof. F. A. Lucas has determined as having belonged to a lynx, probably *Lynx ruffus floridanus*. A bowl had been placed in an inverted position at the outer side of the upper part of the right thigh, and at the upper part of the left tibia lay a vessel crushed to fragments.

Burial No. 4. This burial was the skeleton of an adult, probably male, lying at full length on the back, the head directed S.[1]

The bones were well preserved, practically all belonging to both skeletons being in a condition to save. The bone of the left thigh of this skeleton showed an interesting fracture at about the middle part, with union of overlapping ends, shortening the bone about one inch, judging by comparison with the bone of the other thigh.

This skeleton had at the left of the skull, a bottle, and at the left of the pelvis,

[1] The heads of both burials in this mound pointed between S. and S. by E., one-half point from due south, to be exact.

a bowl placed vertically, under which, also upright, was another bowl, the bones of the left hand lying between the two vessels. Over the middle of the left tibia was a rude jar, which evidently had been used for culinary purposes.

An interesting deposit was at the right hand of the skeleton, extending somewhat up the forearm. In a mass, together, were fifty fresh-water mussel-shells,[1] all of the same variety (*Unio parvus*), each of which apparently had been treated in the same manner. The length of each is a little less than 2 inches. At slightly varying distances from the hinge, but always near it, is a perforation, doubtless for suspension. The opposite end of the shell apparently has been removed by grinding.

Forming a part of this interesting deposit was a large mussel-shell (*Unio gracilis*) broken into many fragments. Through this shell had been several series of circular perforations, in lines.

With this deposit also lay the shell of a small turtle or tortoise, far advanced in decay and very fragmentary. Sufficient of the carapace remained, however, to show a perforation at one end near the margin. A careful search for pebbles within the shell was without success.

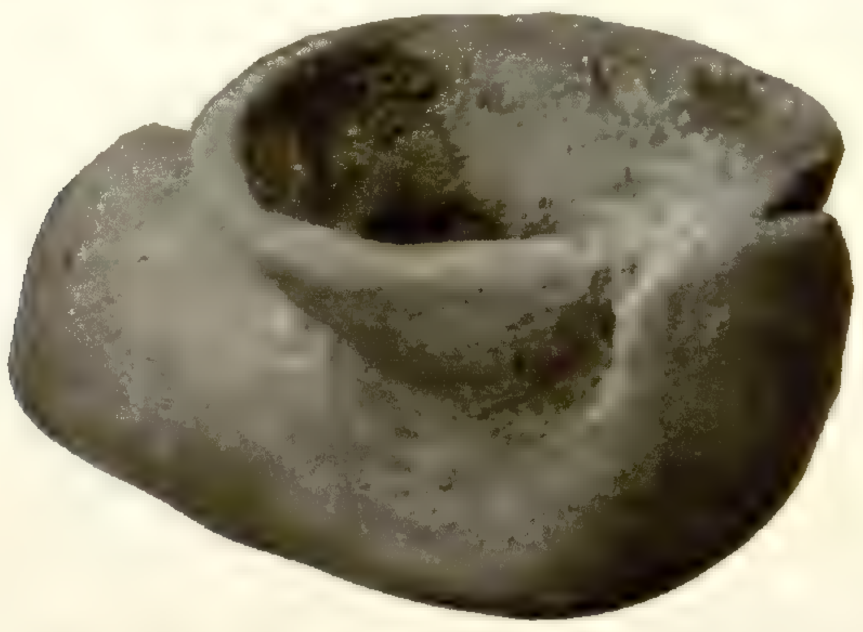

FIG. 66.—Earthenware pipe. McClure Place, Ark. (Full size.)

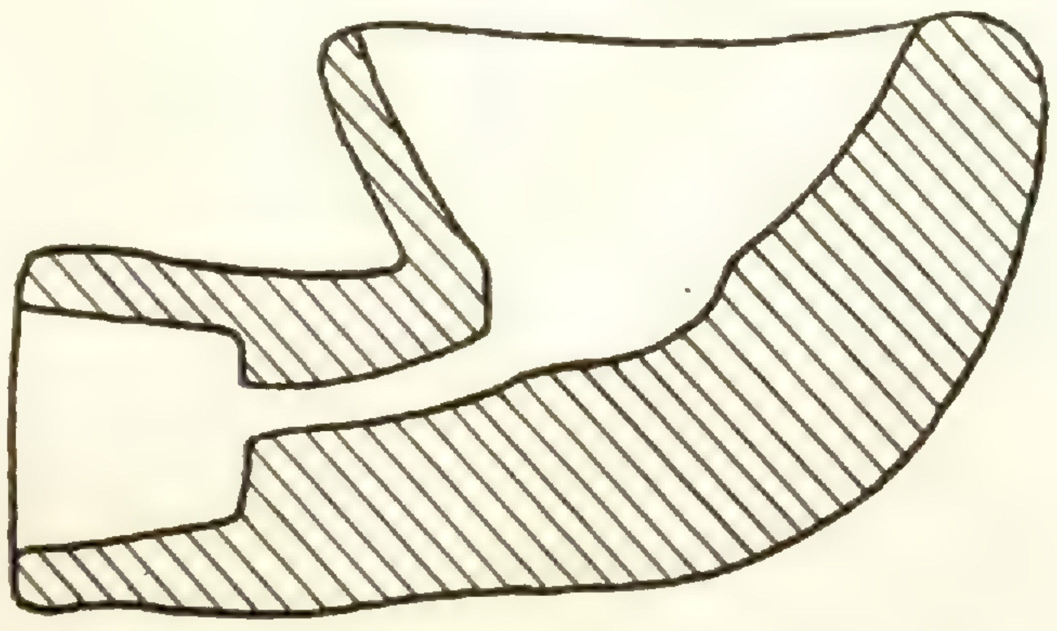

FIG. 67.—Pipe. Vertical section. (Full size.)

Lying among the shells was an earthenware pipe (Fig. 66), which, though bearing no incised decoration and not pretentious in appearance, presents two features of interest. The opening suitable for the reception of a large stem extends inward a certain distance where the stem would meet a shoulder, beyond which a slender passageway for the smoke continues, as shown in section (Fig. 67).

At the front of the bowl of the pipe is a flat addition in relief. Some pipes of this region have projections extending horizontally beyond the bases of the bowls, doubtless allying them with the "monitor" class. Now the flat addition to the pipe in question, which is placed vertically on the front of the bowl, seems to be simply this horizontal projection turned up against the bowl.[2]

The earthenware vessels from this mound include two beautiful bottles, which, with other vessels from the McClure Place, will be described in detail.

Vessel No. 20. This bottle (Fig. 58) on which the attempt to confer a polished surface has been in part a failure since much of the vessel remains the original yellow, has an incised decoration mainly consisting of sun-symbols. There are faint traces of red pigment in some of the line-work.

[1] One of the fifty, found in fragments, no doubt had been uniform with the others, though determination is not possible.

[2] For additional details and illustrations, see at the close of this report.

FIG. 68.—Vessel No. 20. McClure Place, Ark. (Height 8.4 inches.)

Vessel No. 23. This bottle, also decorated with incised sun-symbols, the line-work of which has been filled with red, is shown in Fig. 69.

Vessel No. 1. This little bottle of compound form, the swelling neck representing a cup set in the mouth of a bottle, is of yellow ware, the decoration is punctate and trailed, the design in the main being founded on the scroll (Fig. 70).

Vessel No. 15. This bowl of black ware is decorated over the space forming

Fig. 69.—Vessel No. 23. McClure Place, Ark. (Height 8.8 inches.)

the upper part of a kind of projecting shoulder, with circles and a current scroll in a field of reticulate lines. The decoration shown in the illustration (Fig. 71) completely covers the base and consists of two series of concentric circles with spaces on each side filled in with series of curved lines.

Vessel No. 14. A bowl of ordinary ware (Fig. 72) having on the upper part of the body rude, incised decoration which has been filled in with white pigment,

Fig. 70.—Vessel No. 1. McClure Place, Ark. (Height 3.2 inches.)

Fig. 71.—Vessel No. 15. McClure Place, Ark. (Diam. 4.75 inches.)

is of interest only in that it seems to be a compound form, a bowl with a saucer placed upon it. Small handles are seen in four places on the rim of the lower vessel.

FIG. 72.—Vessel No. 14. McClure Place, Ark. (Height 3.4 inches.)

FIG. 73.—Vessel No. 2. McClure Place, Ark. (Diam. 3.6 inches.)

Vessels Nos. 2, 13, 16, shown in Figs. 73, 74, 75, respectively, are three other vessels with incised decoration from this place.

Fig. 74.—Vessel No. 13. McClure Place, Ark. (Diam. 5.7 inches.)

Fig. 75.—Vessel No. 16. McClure Place, Ark. (Height 2.8 inches.)

Mounds on the Haynes Place, Lafayette County, Ark.

On the Haynes Place, of which Mr. W. P. Haynes, who lives upon it, is the owner, are three mounds in sight of one another, near the bank of Red Lake[1], a former course of Red river.

The largest mound, which is on the edge of a cultivated field, is on fairly level ground; its height, measured from two sides, gave the same result, namely, 7 feet 6 inches. The upper part of the mound was much too steep for cultivation, but it is possible that the lower parts have been plowed over. At the time of our visit, however, no signs of this were apparent.

[1] There are several "lakes" of this name along Red river.

The basal outline of the mound was roughly elliptical; the diameters E. and W. and N. and S., respectively, were 82 feet and 62 feet. The diameter of the summit-plateau, which originally had been small, was difficult to determine owing to the presence of a trench and of debris thrown out in its making. This trench, made by former diggers,—faint-hearted ones if they were treasure-seekers,—began near the margin of the southern part of the mound and continued up, so nearly as we could determine, to what had been the center of the summit-plateau, where a hole about 3 feet in diameter at the surface, tapering almost to a point had been sunk to the basal part of the mound.

The trench, about 5 feet in diameter on top, converged considerably. Its depth was about 2 feet. So far as any interference with the investigation of the mound was concerned, this trench could be ignored.

The mound had every appearance of having been made for burial purposes. As Mr. Haynes, the owner of the plantation, probably felt that his land, which was high in places, would not all be submerged even if the levee which surrounded the estate gave way, permission was accorded us to treat the mound as we saw fit, and in consequence it was completely demolished, our diggers carrying out the work on a level from 1 to 2 feet below the base of the mound, judging from its height as ascertained by us. In addition, narrow but deep pits were frequently dug down from the level of the work to aid in a search for graves.

The mound was variously composed. Much of it consisted of a mixture of clay and sand—mostly clay—brown in color. Also, there was considerable red clay in places, and, locally, very considerable layers of light-yellow sand. There was no uniform stratification throughout.

This mound was a problem. No line of original base or trace of such a line was apparent, and digging below where the base-line might have been expected to be, in places came upon yellow sand, seemingly undisturbed, and elsewhere upon solid red clay without a trace of disturbance. Hence the original base of the mound could not have been below the level of our digging. Why the black stratum which usually marks the base of the mound (of little thickness if it is the result of decayed vegetation alone, more marked if the debris of aboriginal life has contributed toward its making) was absent from this mound only can be surmised. Possibly, prior to the making of the mound, the ground had been cleared by the aborigines for some reason, or perhaps the region recently had been subject to wash from the nearby river.

Throughout the demolition of the mound, with the exception of a burial to be described in due course, the only internal evidence of the erection of the mound by the hand of man was the mixture of the component materials. Bits of pottery, bones of lower animals, fire-places, fragments of stone, were absent.

Five feet six inches south of an imaginary vertical line passing through the meeting-point of the axes of the basal plane of the mound, but on a level 2 feet 4 inches below this plane, if we consider it to have been at a depth of 7.5 feet (which, as we have said, was the height of the mound when measured from the outside),

was a deposit of cremated remains. This deposit lay upon hard, red clay, evidently undisturbed soil, but though the depth of the deposit was, as we have said, about 2 feet in excess of the supposed height of the mound, no pit was evident, though great care was exercised by us to determine the matter. We are inclined to think that the deposit of cremated remains had been placed on the level ground and a mound about 9.5 feet in height built over it. Later, deposits of soil probably filled in around the mound, reducing its height to the extent of about 2 feet.

The cremated deposit, whose maximum length, breadth, and thickness were respectively 43 inches, 28 inches, and 6 inches, was composed of two contiguous deposits, each of a different degree of incineration. One of these, somewhat less in amount than the other, consisted of cremated human bones in fragments, some exceptionally the size of a man's finger and furnishing complete evidence for determination.

The other and greater deposit was almost exclusively made up of fine particles of cremated material, probably human remains in the main, as a few bits of human bones were in it.

Presumably such belongings of the dead as had been selected for interment with the remains of the individual (if the burial was that of a single individual, which presumably was the case) had been subjected to cremation at the same time as the remains. With the deposit of small particles were a few discoidal shell beads each about .25 inch in diameter.

With the large fragments of calcined bones were scattered: other discoidal beads; one tubular shell bead; a flat, rectangular bead of shell, about .75 inch in length, pierced through its major axis. Also in this deposit were: a considerable number of fragments having belonged to several roughly-chipped implements of flint (one a fragment of a spearhead, 1.75 inch in length); a small part of an earthenware vessel; a bit of stone belonging to a celt. All the objects from these deposits had been subjected to fire. The beads are calcined; the stone had been shattered by heat; even the bit of earthenware shows the effect of prolonged exposure to flame.

It was clear that the cremation of the remains had not been performed in the place where they were found, since there were no marks of fire there. Furthermore, though the cremated deposit was carefully searched, missing parts of the objects referred to were not found, and these, presumably, were left at the place of cremation.

The remaining two mounds on the Haynes Place are but a few feet apart. There is a report that relics were taken from one of them, or from near one of them, when material was obtained to make the nearby levee. One of these mounds, about 4 feet high at present, is of no particular shape, owing to wear and wash. Upon it are a frame house and a small out-house.

The other mound, just within the limit of the cultivated field, originally small, no doubt, has been plowed over until but a few inches remain above the general level.

Trial-holes in these mounds were not rewarded.

Mounds on the Friday Place, Lafayette County, Ark.

The Friday Place is another of the plantations on Red river so courteously placed at the disposal of the Academy for investigation, by Mr. Henry Moore, Jr., of Texarkana, Ark. Our search at the Friday Place was made under unfavorable conditions. Red river was in flood and had gone over its banks in places. It was necessary for us to visit the mounds on this place in boats, the water extending to the very bases of the mounds and oozing through the mounds themselves, filling with water the lower parts of excavations of any depth.

Mound A.

In sight from the river bank, on the border of woods, is a beautifully-symmetrical mound of circular outline, 70 feet in basal diameter. Its height is 7.5 feet. A causeway joins the mound on the southern side at a level of about one-half its height. In this causeway was an oval space appearing as if it had been dug out, though no evidence of material obtained from it was in sight. As we have noticed similar depressions in other aboriginal causeways, we are inclined to believe they were made intentionally by the aborigines for a reason of which we are ignorant.

Ten trial-holes, many of which were greatly enlarged, were put down from the summit-plateau of Mound A. Those in the western half of the mound came upon a fire-place which proved to be about 16 feet by 21 feet in extent. This fire-place, which had a maximum thickness of 1.5 foot, was 6.5 feet (measured from the under surface) below the summit-plateau.

The fire-place was worked by our diggers throughout its extent, with the exception of a comparatively small part below a large tree on the center of the mound, where, however, possibly a pit may have been. Our digging, which was carried to a depth of about 8.5 feet, came upon no indication of a pit elsewhere in the mound.

Below the fire-place, that is, 6.5 feet down, there seemed to be an unbroken base-line, though from the height of the mound one would expect such a line at a somewhat greater depth. This base-line was much less distinctly marked in the eastern part of the mound, where the fire-place did not extend. It seemed possible to us that the infiltration of water through burnt material may have accentuated the color of the basal line, which lay beneath the fire-place.

Our trial-holes, passing through this base-line, went several feet into seemingly undisturbed material, river sand and fine gravel in places, the mound itself being composed of a mixture of clay and sand, the sand preponderating.

Nothing but the demolition of the mound could answer the question as to its former use, but this method of inquiry in this region, and especially at a time when horses and mules were taking refuge on the mound, was entirely out of the question.

Mound B.

This mound, in sight in a northerly direction from Mound A, was small and so surrounded by water that its investigation was not practicable.

Mound C.

About one-third mile S. by W. from Mound A, in woods, is another mound having a height of but 2 feet 8 inches, yet fairly symmetrical owing to the comparative steepness of its sides and the extent of its level summit-plateau which is 36 feet across, while the diameter of the circular base of the mound is but 50 feet. This mound has an annular approach (resembling the causeway leading to Mound A), its diameter being 41 feet, and the excavated part 23 feet. The height of the causeway is about one foot.

Four trial-holes sunk into the mound reached a basal layer about 2.5 feet from the surface. Further digging under prevailing conditions was deemed inadvisable, and the mound was left (of course, after the careful filling of the holes), to the horses and mules which were approaching it for refuge.

Mound D.

Two hundred yards approximately S. by W. from Mound C, also in woods, was another mound of irregularly-circular outline. Its diameter was 38 feet; its height, 2.5 feet. In this mound, which was composed of sand with a slight admixture of clay, a central excavation 18 feet square first came upon an interesting little vessel entirely apart from any other object. This vessel, a bowl, containing clay of a degraded white, doubtless used as a pigment, has rudely-executed, trailed lines encircling it. Four equidistant projections, which are hollow and contain small objects that rattle when shaken, are on the body. Other and more interesting vessels of this class will be described in our account of the Foster Place, somewhat farther up Red river.

Six burials came from this mound, five of adults, one of a child, each extended on the back,[1] and all with the heads directed S.[2]

Burials Nos. 1, 2, and 4 lay together. Burials Nos. 1 and 2, adults, almost certainly a male and a female respectively, lay side by side, about one foot apart. Burial No. 4, adult, lay in part immediately below Burial No. 1, the feet of Burial No. 4 being under the pelvis of the other skeleton, and the upper part of the body extending beyond it. The bones of these skeletons were considerably decayed, though the skull of Burial No. 1 was preserved, the only one saved from the mound.

These three burials lay in a pit, the dimensions of which, so nearly as we could determine, were: length, 11 feet; width at lower end, or near where the feet of the skeletons were, 6 feet; the measurement of the upper end of the pit was prevented by the caving in of sand.

The base-line of this mound was come upon at a depth of 5 feet below its highest part. This base-line, of irregular thickness, ranging between 2 and 6 inches, had been cut through by the pit in which these burials lay and which extended about 4 feet below the base-line. No sign of a pit was noticeable above the base-

[1] One skeleton had the legs crossed at the ankles, the right over the left.
[2] Two skeletons had the heads directed S. by E., the rest almost due S.

line. Presumably, the grave was made prior to the building of the mound, which probably was erected to commemorate the triple interment.

As in the case of the mound at the Haley Place, already described in this report, burials had been made in the body of this commemorative mound.

Burials Nos. 3 and 5, a child and an adult respectively, lay side by side 2.5 feet below the surface of the mound. No pit was apparent, though it is quite possible that at this depth there was one which was not distinguishable.

Burial No. 6 lay in a pit 8.5 feet in length and slightly less than 5 feet in width at each end. This pit, which was not traceable above the base-line, was plainly apparent cutting through it and extending about 6 inches below it, the base-line in the part of the mound where this burial lay being 4 feet 4 inches down. No doubt a pit had been made in the mound (since a grave from the surface would be deeper than 6 inches), but as water was oozing through the side of the mound when this last burial was encountered, delimitation of a pit in the wet sand was impossible.

As the artifacts found with the three deepest burials were recovered from mud and water, sometimes 2 feet in depth, a statement of their exact positions in respect to the skeletons could hardly be expected, though where most of the objects had been placed was determined, we believe, with the exception of the pottery that lay apart from the skeletons and seemed to have been placed in the grave for the burials in common.

With the burials were eighteen earthenware vessels, nearly all badly broken.

Burial No. 1 had at each side of the head an ear-ornament, blunt pins of shell, each 4.25 inches in length, the heads directed forward. Adjoining the head of each is a shallow, encircling groove, doubtless to accommodate the lobe of the ear.

At the right wrist of this burial were a number of small strips of shell, like those found at the Haley Place, with the exception that those from the Haley Place are undecorated, while these have faint line-work upon them, which once probably formed part of the decoration on some larger object, since it is not complete on the strips.

At the outer side of the left thigh was a shell drinking-cup wrought from a conch (*Fulgur perversum*) from which a circular part containing the spire of the shell evidently had been accidentally broken out. To repair the cup, which no doubt was of value so far from the Gulf of Mexico, whence the shells were brought, a circular part containing the spire had been cut from another conch in such way as to make the part larger than the orifice in the broken shell. Presumably the shell from which this part was cut was intended for a purpose other than the making of a cup, in which case the part containing the spire would not be needed. Next, four equidistant holes had been made in the broken shell surrounding the missing part and four corresponding perforations had been drilled in the portion intended for repair. Doubtless, then, this portion had been placed above the missing part and lashed on with cord, sinew, or strips of hide, and the marginal parts of the addition coated with material to render the junction water-proof, probably gum, since no asphalt was present. The shell cup showing the circular

opening uncovered, then closed with the shell addition, and lastly the addition itself, are shown in Figs. 76, 77, 78.

At the feet of this burial was a mass of gray material, probably an impure clay used as pigment; and between Burials Nos. 1 and 2 were two shell disks, each about 2.25 inches in diameter, parallel and about 1.5 inch apart. Neither disk has decoration or perforation of any kind. A number of similar disks were found by us elsewhere along Red river in Arkansas.

FIG. 76.—Shell cup showing broken part and portion of another shell for repair. Friday Place, Ark. (Diam. of body 6.7 inches.)

Burial No. 3, the child, had over the right femur a small bowl, and at the neck a pendant (Fig. 79) made from green slate, to resemble a lizard in outline. Two holes take the place of eyes and served for suspension.

Burial No. 5 had, near the skull, two bottles of medium size, both undecorated, and at the left femur a bowl. Three other vessels lay near the feet.

Burial No. 6 had been favored with twelve vessels variously placed in the pit. At the outer side of the left femur was a shell drinking-cup, and a double-pointed bone implement, very slender, 7 inches in length, lay with part of a similar implement about 2 feet from the head.

At the outer side of the right thigh and extending up it were six or more shell strips and one small, shell disk, all imperforate.

Thirty-eight vessels of earthenware came from this mound, of which eight were unbroken, though some included under this head are cracked to such an

extent that their inclusion for long in a list of unbroken vessels is problematical.

The vessels from this place, which present no features new to the region, have as usual among them many upon which the presence of soot indicates their former use for culinary purposes. In two of the vessels were mussel-shells.

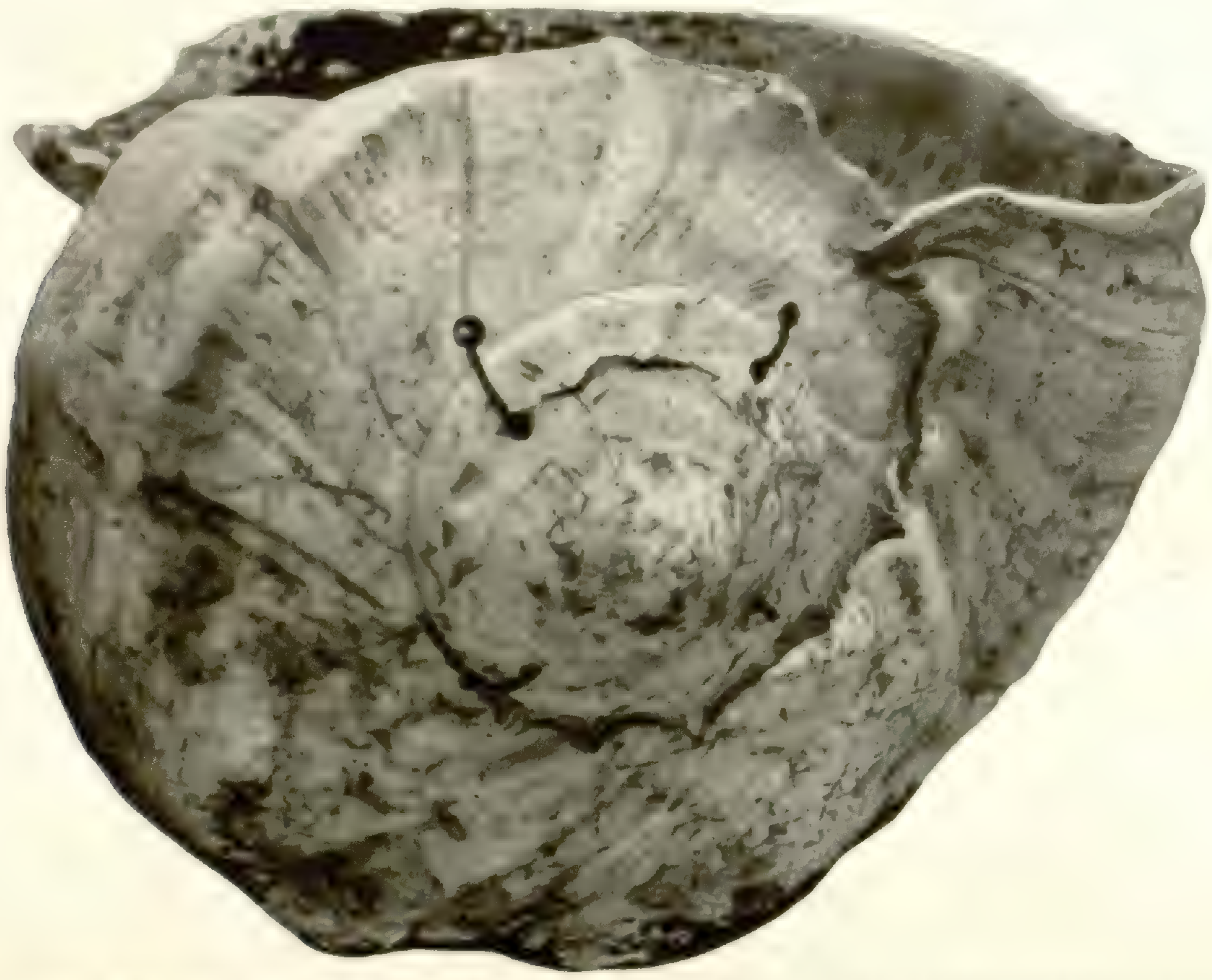

FIG. 77.—Shell cup with added part tied in place. Friday Place, Ark. (Diam. of body 6.7 inches.)

It is impossible to say whether or not other vessels remain in Mound D, as the increasing height of the water around the mound made further investigation impossible.

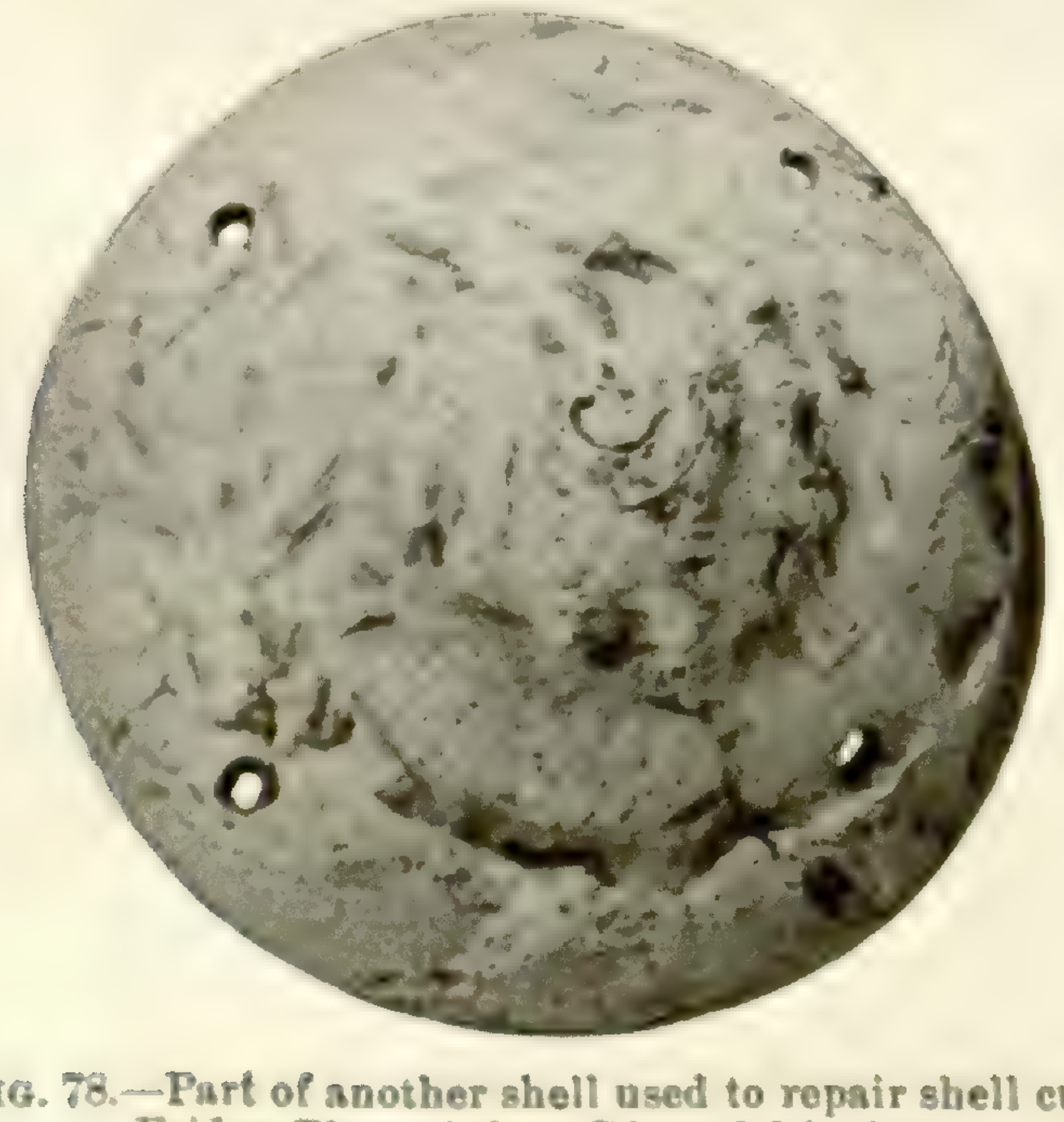

FIG. 78.—Part of another shell used to repair shell cup. Friday Place, Ark. (Diam. 2.2 inches.)

FIG. 79.—Pendant of slate, in form of lizard. Friday Place, Ark. (Full size.)

Vessel No. 17. This bottle (Fig. 80) upon which contact with roots has conferred a rough appearance, has, surrounding the union of the neck with the body,

a series of diamond-shaped, concentric figures beneath which are designs based on the scroll. The line-work seemingly is trailed.

FIG. 80.—Vessel No. 17. Friday Place, Ark. (Height 8.4 inches.)

Vessel No. 28. This vessel (Fig. 81), which has been used for culinary purposes as shown by the soot upon it, has an incised decoration forming scrolls in connection with the background of the ware.

Vessels Nos. 6 and 33. These vessels with incised decoration which has been filled in with white pigment, are shown in Figs. 82, 83, respectively.

Vessel No. 1. This bowl, 1.7 inches in height, is decorated with deeply-trailed, circular lines and has four equidistant projections which contain objects which rattle when shaken. It is of the same variety as is Vessel No. 80 described in our account of the pottery of the Foster Place, though the vessel from the Friday Place is smaller than the other.

FIG. 81.—Vessel No. 28. Friday Place, Ark. (Diam. 7 inches.)

FIG. 82.—Vessel No. 6. Friday Place, Ark. (Height 5.1 inches.)

FIG. 83.—Vessel No. 33. Friday Place, Ark. (Diam. 7 inches.)

MOUND ON THE MOORE PLACE, LAFAYETTE COUNTY, ARK.

On the Moore Place (formerly the Murphy Place), belonging to Mr. Henry Moore, Jr., of Texarkana, Ark. (whose Battle Place and Friday Place already have been described in this report), in sight from the river, is a mound part of which has been under cultivation. Portions from one end of it have been removed for the construction of a levee, and a road passing over the mound gradually has worn away and divided the elevation into two parts which usually locally are referred to as two mounds.

The mound, whose present length is about 75 yards and whose maximum width is 35 yards, approximately, extends NW. and SE., the maximum height, about 5 feet, being attained at the northern end, whence the mound gradually slopes to the general level of the field.

Though a few bits of earthenware and chips of flint lay on the surface of the mound, indicating possible occupancy in aboriginal times, trial-holes, except in two or three instances where the soil was darker, went through yellow sand. All reached undisturbed clay. The sole object encountered was a small, flat, flint pebble, rudely chipped.

MOUNDS ON THE FOSTER PLACE, LAFAYETTE COUNTY, ARK.

On the Foster Place, belonging to Mr. L. A. Foster, of Hope, Ark., is a mound half, or almost half, eaten away by the river. The major diameter of the remaining part is about 50 feet; its height, 4 feet. Considerable digging in and near this remainder of the mound came upon no aboriginal remains of any kind.

About 200 yards E. from the digging just described is a mound in the corner of a cultivated field, though but a small part of the mound itself has been under

cultivation. This mound, which is irregularly circular, has a diameter of about 50 feet and a height of 4.5 feet. A tree 14 feet in circumference 2.5 feet from the ground monopolizes the central part of the mound.

On the plowed ground nearby were many fragments of pottery and chips of flint, but, curiously enough, no arrowheads rewarded a careful search.

Trial-holes, one of which, SW. of the central tree, was 7.5 feet by 13 feet, were sunk over the surface of the mound and carried to a maximum depth of 7 feet 9 inches to underlying yellow sand in search of sub-basal pits. Some of the trial-holes came upon burials in the southern half of the mound, mostly well down the slope. Others were similarly successful in ground extending from the southern side of the mound into the cultivated field. The ground at that place was somewhat higher than the rest of the field and had risen under deposits made during aboriginal occupancy. From this ground had been plowed up the debris we have referred to which lay all over it and over parts of the field near it. Human bones and pottery, in fragments, were found in places on this ground.

The very irregular space in which burials were found, though persistent digging was done for days in all parts of the mound and its vicinity, was an area about equivalent to 35 feet square. Eleven burials were encountered, ten of adults, one of a child, none with bones in condition to preserve. The adult skeletons lay extended on the back; the legs of two of the skeletons were separated, doubtless to allow the introduction of the pottery vessels which were found between the legs.

Six of the ten adult skeletons lay with the skulls directed S. or within two or three degrees from S.; the remaining four headed respectively N., N. by E., N. by W., S. by E., or very nearly so.

The burials lay in pits, which, however, with one exception, were difficult to trace with exactness as they were large, and in the restricted space in which they had been placed, sometimes intersected one another. Furthermore, though there was much clay in the made-ground locally, there was also much sand, so that in attempting to dig out the pits one encountered serious downfalls of material which obliterated the boundaries of the graves.

Though the lower part of the slope of the mound and the made-ground extending from its southern side had been cultivated, and we found burials there disturbed by the plow, nevertheless a pit 5 feet 8 inches in depth was discovered in the made-ground outside the limits of the mound proper. Other burials in this ground ranged in depth between the superficial ones cited and one at a depth of 3 feet 10 inches.

A pit in the body of the mound, the exception we have noted, began as to its northern boundary near the southwestern side of the central tree and extended somewhat down the southern slope. Its limits were clearly defined, the material in which it was differing somewhat from that of the made-ground of the extension from the southern part of the mound in which most of the burials were. Its dimensions were: length, 9 feet 2 inches; width, northern end, 6 feet 10 inches; southern end, 6 feet 8 inches. The depth of this pit, which was traceable from the surface, was 7 feet 8 inches to clear, yellow sand.

On the bottom of this pit lay two adult skeletons (Nos. 3 and 9) extended, but in reverse directions, one (No. 3) placed immediately above the other, the right foot resting on the left shoulder of the under one, the left foot over the skull. The left foot of the lower skeleton was under the right shoulder of the upper one, and the right foot lay under the cranium. The skeletons were not centrally placed in the pit, but lay somewhat diagonally, approaching the western side at the northern end and the eastern side at the southern end.

All the burials at the Foster Place had been well provided with mortuary tributes. In addition to other objects the eleven burials there had with them no fewer than two hundred and forty-six vessels of earthenware and probably many more. That there were more vessels than the number given (which is the total of the score taken when the vessels, broken and whole, were removed from the graves) is certain, as from one confused mass of broken pottery counted as one vessel on removal several almost complete vessels afterward were put together under our directions.

Out of all the great number of vessels found, but sixteen were removed unbroken, owing to the deplorable wreckage that had ensued in consequence of the method followed by the aborigines at this place in depositing the vessels. The receptacles as a rule, had not been arranged singly, or, if in a group, at some little distance apart, but had been heaped together, one above another and one against another, so that later, when the pit was filled, and later still when the ground settled, the vessels were crushed to bits into and against each other and remained in layers of intermingled fragments. In addition, this grinding together presumably was the cause of the state of disintegration into which parts of many of the vessels had passed.

One of the great deposits, after having undergone the crushing process described, and, of course, having been greatly reduced in bulk, still had a height of 22 inches.

The deposits of vessels, as a rule, were not immediately with the skeletons, but presumably often had been piled against the walls of the pits (in the corner perhaps), though generally they were connected with the burial through the presence of a few other vessels arranged much less closely between the deposit and the burial. It was among such vessels that the few entire ones obtained by us at the Foster Place were found.

The vessels among themselves had been variously placed. Some contained other vessels; some were covered by others inverted, or by vessels imposed in an upright position; in several instances shell cups had been inverted over the necks of bottles—all of which could be distinguished as the shattered vessels lay in the ground prior to removal.

In a few of the vessels were badly decayed mussel-shells, spoons, placed singly. In a few were decaying bones of small fish and of the gray squirrel (*Sciurus carolinensis*) which Professor Lucas has determined for us. Bones of this animal also were found in five or six instances lying near burials, though not enclosed in vessels.

In the deep pit in the mound (Burials Nos. 3 and 9) were bones of the Virginia deer which presumably had been placed with the dead, contained in meat.

Other vessels held, in two or three instances, clay of a degraded white, pigment no doubt; and several times, also in vessels, was found green pigment which Doctor Keller describes as "a mixture of glauconite and a soft and friable clay, probably kaolin. It contains a large proportion of iron in the ferric and ferrous states, and a little potash. The outer crust is oxidized and shows some red spots of ferric oxide."

As detailed in our description of individual vessels from this place, a considerable number were found here smeared over with green pigment, not in connection with the decoration, since the green coating was often found over vessels already decorated with pigment or otherwise, but placed as a coating as if done in fulfilment of some ceremonial rite of mourning. Much of this coating was removed when the vessels were washed, but on a number of them, usually bottles, a considerable amount of the glauconite pigment still adheres.

Four small earthenware pipes came from the Foster Place, one of which is shown in Fig. 84. This pipe resembles one, figured in this report, which came from the McClure Place, on which is, presumably, the extension present on a class of "monitor" pipes, so called, but in these instances pressed up against the bowl instead of projecting horizontally below it. The projection shown on the pipe from the McClure Place is square at the end, like some found in the mound on the Haley Place, while that on this pipe from the Foster Place is pointed, as are the projections on other pipes from the Haley Place.

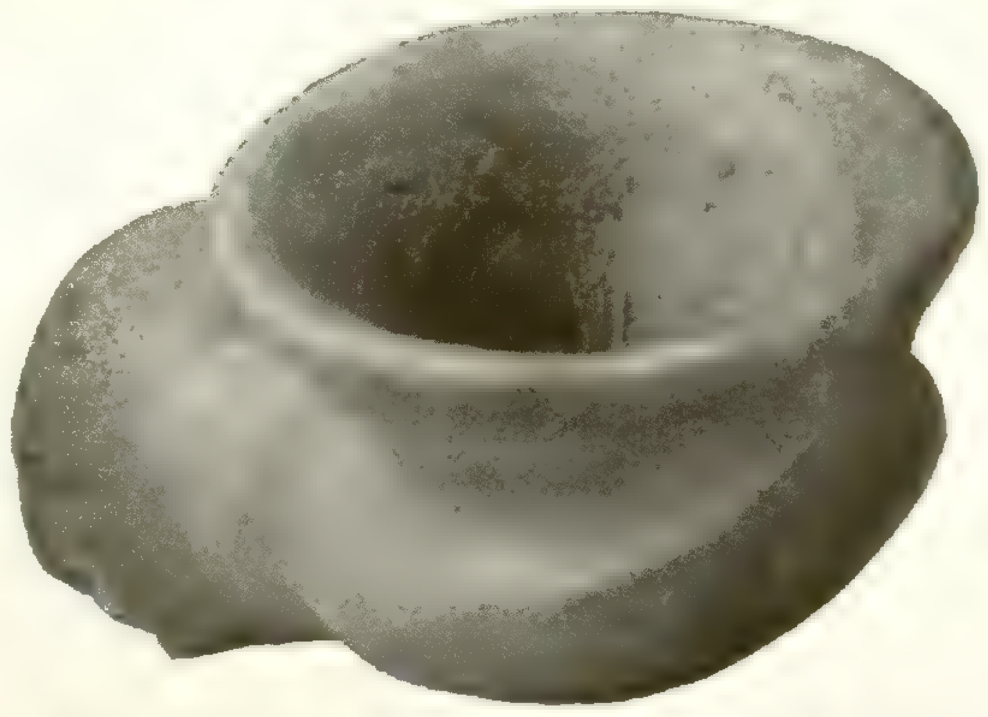

Fig. 84.—Earthenware pipe. Foster Place, Ark. (Full size.)

Another pipe from this place has the same pointed extension turned up against the bowl, and in this case this part is less broad than it is on the pipe just described, and resembles more closely the pointed projections seen on some of the pipes from the Haley Place.

A third pipe from the Foster Place has a mere indication of the upturned projection, which is a still more conventionalized treatment of the projection. This pipe, also, has the peculiar "shoulder" against which the stem of the pipe abutted, as described and shown in our account of the pipe found at the McClure Place.

The fourth pipe from this place was badly crushed and much of it was missing.

Fig. 85.—Arrowhead of flint. Foster Place, Ark. (Full size.)

We have referred to the fact that no arrowheads lay with the midden debris on the surface at this place. But few were found with the burials—three in one deposit, two singly, all of flint. One of the single arrowheads is shown in Fig. 85.

In one deposit were four masses of kaolin (which the reader will recall is a white clay used as pigment by the aborigines), each somewhat smaller than a closed hand. Of this material Doctor Keller writes: "This specimen is almost pure kaolin of the variety known as lithomarge. The bulk of it is pure white, but it shows veins of red ferruginous clay, both at the top and bottom."

From the Foster Place, with other objects, came a small amount of material resembling asphalt, as to which Doctor Keller writes as follows:

"The little black pieces marked 'Asphalt? Burial No. 2, Foster Place, Ark.' are an asphalt-like material which differs from true asphaltum in that it is not soluble in liquids like ether, carbon disulphide, and turpentine, and in that it does not melt on heating. It gives a pure brown powder on grinding, and leaves a perfectly white ash on burning. This ash, which constitutes about 10 per cent. of the substance, consists almost entirely of lime and magnesia, containing traces of phosphoric acid."

Four flint pebbles, each about 1.5 inch in major diameter, all slightly chipped, lay together with a burial.

With separate burials were three small, chisel-shaped, ceremonial axes, on one of which the mark where the handle was is plainly visible. These little axes, of slate, of silicious rock, of shale, are respectively, 4.2 inches, 3.8 inches, 3.3 inches, in length.

FIG. 86.—Shell cup. Foster Place, Ark. (Length 5.1 inches.)

Several piercing implements of bone, all badly decayed, were found singly with burials, as was a deposit of slender, bone pins somewhat similar to those to be described later in the account of this place, which, however, are in a much better condition.

The aborigines who dwelt at the Foster Place employed shell to a considerable extent for practical use and for ornament. Pearls placed at the neck, all badly

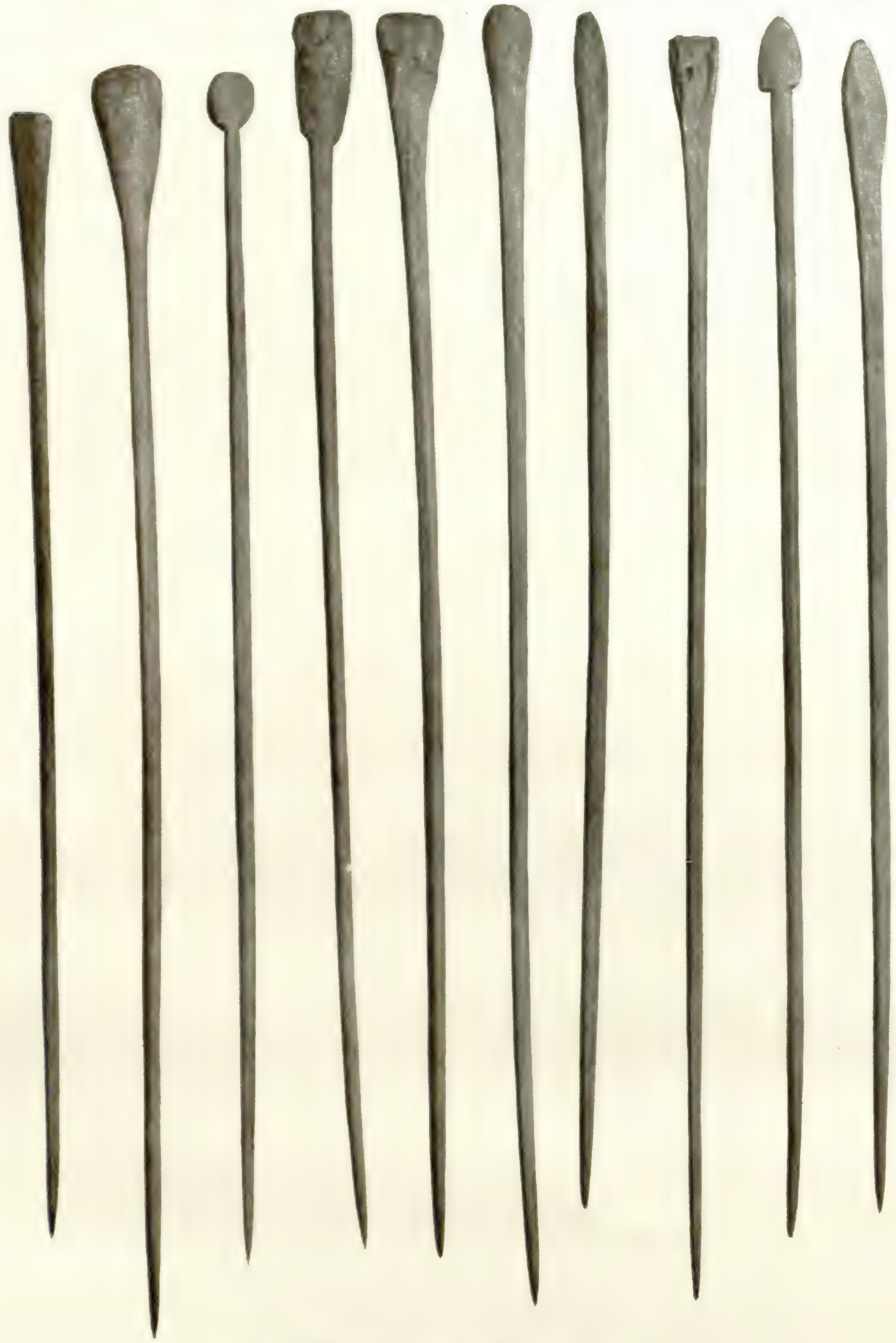

FIG. 87.—Bone Pins. Foster Place, Ark. (Full size.)

decayed, lay with three burials; and shell beads, some 1.5 inch in major diameter, were encountered seven times, though not with that number of interments.

In thirteen cases small, shell disks and sections of shell, usually oblong, were found, the disks in pairs, parallel, a little distance apart. As a rule these objects are imperforate, though a pair of disks each have a small perforation on one side, and small, single holes are present in two of the oblong sections. In one instance some of these shell sections lay near pin-shaped ear-ornaments, each 4 inches in length, and may have been attached to them in one way or another.

Thirteen shell cups lay with burials, two of which cups merit description. All but one were wrought from conch-shells (*Fulgur perversum*). The exception is a shell with projecting spines (*Murex spinacosta*). The columella and part of the body whorl have been removed and perforations for suspension have been made, one at the beak, one near the shoulder (Fig. 86). The other cup has engraved decoration on the outside, which, owing to decay and incrustation, is none too plainly visible. The design, however, consisting of groups of curved lines, is rudely executed and would not be striking under any circumstances. This shell had, for purposes of suspension, two perforations near the shoulder and one at the beak. Some of the other shell drinking-cups also were perforated for suspension.

Two most interesting deposits were found at this place.

FIG. 88.—Pendant made from a small *Fasciolaria*. Foster Place, Ark. (Full size.)

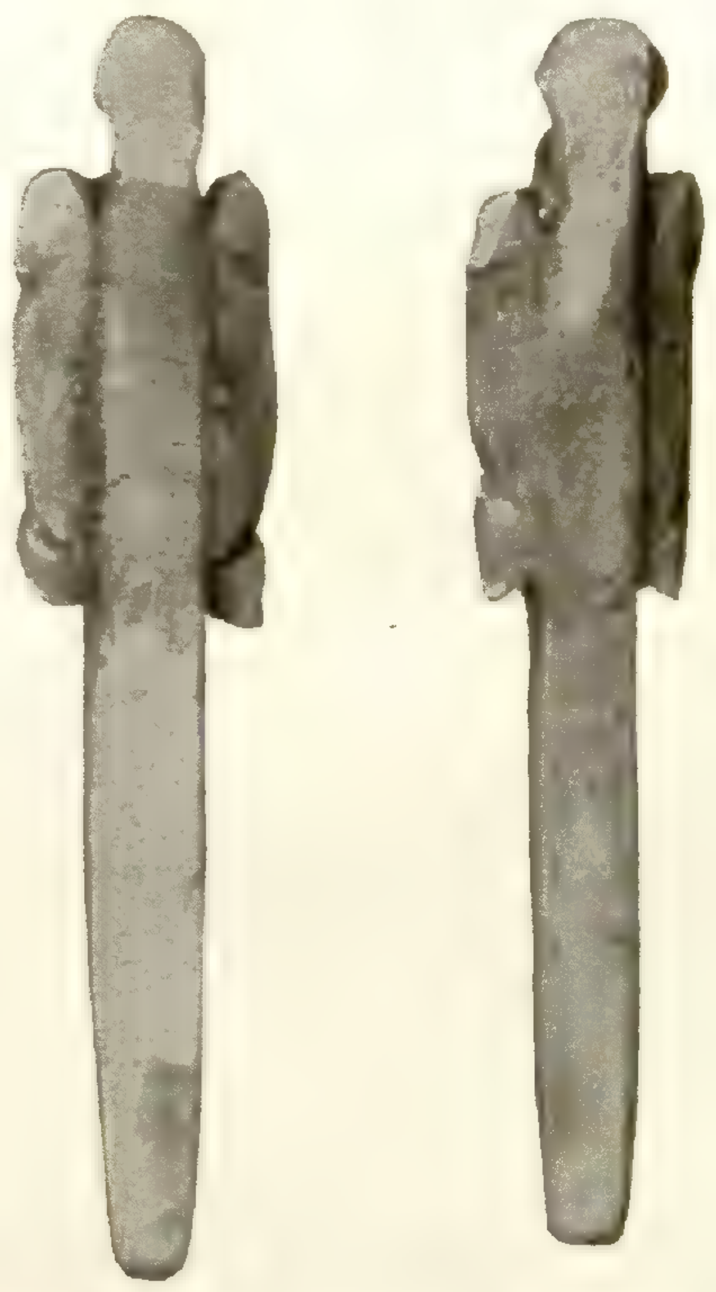

FIG. 89.—Pendants of shell, in form of lizards. Foster Place, Ark. (Full size.)

Burial No. 4, the skeleton of an adult, had, near the head, a deposit as follows: eighteen delicate bone pins (a selection from which is shown in Fig. 87), placed together, almost vertically, all points down, some pins, in places, dyed green from contact with copper carbonate; a small shell drinking-cup; one of the ceremonial axes already described; a globular bead of marble, about one inch in diameter; a pendant made from a young marine shell (*Fasciolaria gigantea*), carefully smoothed and perforated for suspension (Fig. 88); a columella of a conch (*Fulgur*), 7.8 inches long, with a perforation at the lower end, having still attached to it the spire and a surrounding portion which, like the columella, have been carefully smoothed;

FIG. 90.—Pendant of claystone, in shape of a lizard, formerly coated with sheet-copper. Foster Place, Ark. (Full size.)

FIG. 91.—Shell ear-ornament. Foster Place, Ark. (Full size.)

FIG. 92.—Blade of flint. Foster Place, Ark. (Full size.)

FIG. 93.—Implement of flint. Foster Place, Ark. (Full size.)

seven pendants 2 to 3.5 inches in length, all made from columellæ of the conch, some with rude, line decoration; one small ear-plug of shell; two pendants (Fig. 89), and part of another one, of shell, each with perforation through the head for suspension; a lizard carved from limestone, with a perforation through the neck for suspension (Fig. 90). This pendant, on removal, was coated with sheet-copper which, however, badly carbonated, has almost entirely flaked from the stone. This ornament, when highly polished, before the deterioration of the copper, must have been effective indeed.

On each side of the head of this burial was a pin-shaped ornament of shell, 5.5 inches in length, one having a perforation through the shank just below the head, and both grooved there to accommodate the lobe of the ear (Fig. 91). These ornaments, wrought from the columella of the conch, are doubtless of the kind described by Du Pratz, which he says were made by the aborigines from the axis of a large shell called *burgo*, the ornament having a head somewhat larger than the rest to prevent its slipping through the perforation of the ear.

Burial No. 10, adult, had on the thorax a superb, double-pointed, leaf-shaped blade[1] of flint, 13.6 inches in length, 2.6 inches in width, and but .3 inch in maximum thickness (Fig. 92).

On this triumph of aboriginal endeavor in stone were piled, parallel, ten double-pointed implements, six of fossiliferious chert, four of flint. These implements, which range in length between 7 and 8.8 inches, do not proclaim their former use by their appearance. Some show polish as by wear. Several are pointed as for piercing; while some, on the other hand, have blunt points. One of these latter implements, shown in Fig. 93, has an added feature of interest. In its making, the implement has been broken, the two parts have been completed, and then marginal notches have been made near the broken areas to facilitate the lashing together of the two parts. That the breakage did not occur after the completion of the implement is evident from the fact that the faces of the two parts at the line of fracture do not correspond.

With the objects just described were: two shell gorgets, one placed on edge, the other lying flat (Figs. 94, 95); a small mass of glauconite (green pigment); a mass of red pigment (red oxide of iron).

Also with Burial No. 10, forming part of the deposit, and lying together at that end of it which was nearest the skull, were the two ear-ornaments of limestone, shown (after slight restoration) in Fig. 96, where the obverse of one, presenting a central boss surrounded by a marginal part sloping outward and upward, and the reverse of the other with the part used in fastening through the lobe of the ear, are illustrated. These ornaments, each with a maximum diameter of 4.4 inches, have been coated with sheet-copper on the obverse sides. Much of this material had

[1] This region seems to have possessed able workers in stone in aboriginal times. In "The Stone Age in North America," by W. K. Moorehead, Vol. I, Fig. 199, are shown some beautiful "drills" (which we believe to be arrowheads), found by Mr. W. P. Agee, Jr., of Hope, Ark., who writes us that these points (more than two hundred of them) were found by himself in a mound in this region, near Red river, in 1906. They were found in one lot, all being placed around the head of a skeleton. They range in length between 2 and 4.5 inches.

FIG. 94.—Gorget of shell. Foster Place, Ark. (Full size.)

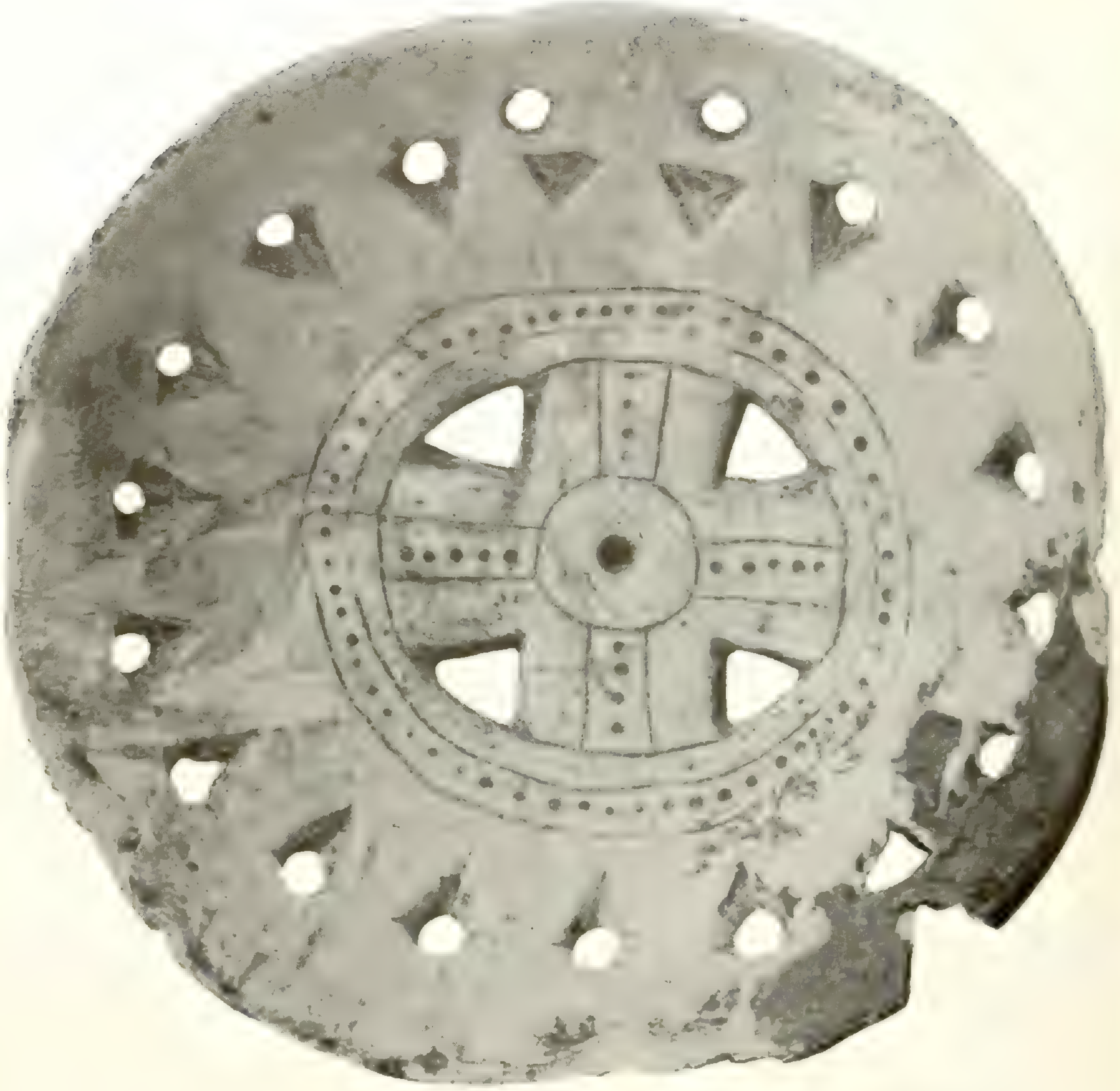

FIG. 95.—Shell gorget. Foster Place, Ark. (Diam. 4.5 inches.)

FIG. 96.—Ear-plugs of limestone, formerly copper-coated. Foster Place, Ark. (Full size.)

decayed away before the discovery of the ornaments, and still more of it was lost on removal and in cleaning.

With Burial No. 11 was a pair of ear-ornaments of the class just described. Each of these ear-plugs, also of limestone, with a maximum diameter of 3.1 inches, bears obversely, in relief, an eight-pointed star surrounding a central boss (Fig. 97). These ornaments apparently have been coated on both sides with sheet-copper, considerable of which, greatly carbonated, still remains on those parts of the ornaments that were exposed to view when the ornaments were in use. These ear-plugs, like those with Burial No. 10, lay together near the shoulder, and were not in place at each side of the head.

The pottery from this place, the best of which has been cemented together with unimportant restorations when needed, includes a number of large vessels coated with an inferior red, one of which is shown in Plate XLIII.

FIG. 97.—Ear-ornaments of limestone, having had coating of sheet-copper. Foster Place, Ark. (Full size.)

The ware of most of the better vessels found is of high grade and often bears a polished surface. Great care was given to modeling by the potters of this place, and asymmetrical vessels were not met with by us, even cooking-vessels being carefully made. Undecorated vessels were rare, though many, of course, have incised decoration to only a limited extent. Much of the incised decoration is filled in with white or with red, and a few vessels have a part of the line-work filled in with one color and a part with the other. There is comparatively small variety in shape, but the graceful form of the vessels leaves little to be desired. Taking everything into consideration, we believe we are justified in saying that the pottery found at the Foster Place is of a higher average excellence than that met with by us at any

other site on Red river, except possibly Gahagan, where, however, too few vessels were found to justify a comparison as to average.

Before proceeding to describe the vessels from this place that offer features of exceptional interest, we would quote from a letter from Mr. Charles C. Willoughby in relation to many of the symbols that appear on the pottery of Red river in Arkansas, including much earthenware from the Foster Place. Mr. Willoughby writes:

"The incised designs on the water-bottles are very interesting to me and I think there can be little doubt as to their general meaning. The sun-symbol seems to be prominent.

FIG. 98.—Vessel No. 93. Foster Place, Ark. (Height 4.3 inches.)

"Other cosmic designs—the circle or concentric circles with four radiating points (surrounding the necks of Vessels Nos. 20, McClure Place, and 239 and 240, Foster Place), the triskele, the swastika and the curved tadpole-like figure (near the neck of Vessel No. 23, McClure Place) so often connected with the eye of the horned serpent god, appear to be associated with the universe, and probably represent the sun, the four directions, the winds, the waters, and their various gods.

"These symbols seem to have been intimately associated with the religious ideas of various American tribes, but especially with those of the Mississippi basin, both historic and prehistoric."

Mr. Willoughby's paper on "An Analysis of the Decorations upon Pottery from the Mississippi Valley"[1] is of great service to those interested in the pottery of Southern United States.

We now take up the description of individual vessels from the Foster Place.

Vessel No. 93. There is shown in Fig. 98 an interesting vessel which we believe to be of a new variety. The body, covered with deep, trailed decoration, is circular with four equidistant projections, which are hollow and contain objects which rattle when shaken. The body of this vessel rests on four upright supports, which are joined to a base roughly annular in shape.

Vessel No. 25. This vessel is in all respects similar to Vessel No. 93, except as to size, its height being 3.6 inches.

FIG. 99.—Vessel No. 198. Foster Place, Ark. (Height 4 inches.)

Vessel No. 198. The vessel shown in Fig. 99 resembles the two just described as to the form of supports and base. The body, however, which is without the hollow projections, is thickly covered with small knobs. This vessel is partly filled with green pigment, glauconite, the constant use of which on vessels at this place has already been described.

[1] "Am. Journ. of Folk-Lore," Vol. X, 1897.

FIG. 100.—Vessel No. 115. Foster Place, Ark. (Height 7.9 inches.)

Vessel No. 80. This bowl is of the same description as Vessels Nos. 93 and 25 with the exception that it has been made without the upright supports and the annular base. The base of this vessel is flat. The maximum diameter is 9 inches. In the bowl was a mass of light-colored clay, doubtless a pigment.

Vessel No. 115. We have here a bottle of fine, polished, black ware with the usual symbols found on bottles from this region, incised in four series on the body. The line-work has been filled in with red pigment. In places the green, glauconite paint, presumably used in a ceremonial way, still adheres (Fig. 100).

Fig. 101.—Vessel No. 99. Foster Place, Ark. (Height 6.4 inches.)

Vessel No. 99. This gem (Fig. 101), a bottle of highly-polished, black ware, bearing sun and cosmic symbols, incised, and having in each of the four interior circles of the series a swastika, is another example of the beautiful bottles found at the Foster Place, most of which, however, as we have related, were woefully shattered. In the incised line-work is red pigment; and over the bottle, in places, still adheres the green glauconite.

Vessel No. 1. This bowl (Plate XLII) of polished, black ware with white pigment rubbed into the incised design, which consists mainly of series of crescentic lines, resembles a number found in this region. In this particular bowl more white pigment than is usually found remaining is present in the line-work.

FIG. 102.—Vessel No. 239. Foster Place, Ark. (Height 6.9 inches.)

FIG. 103.—Vessel No. 45. Foster Place, Ark. (Height 5.8 inches.)

Vessel No. 239. In Fig. 102 is shown a bottle of black ware with an interesting, incised decoration based on sun-symbols, having much red pigment still remaining in the lines. The bottle is smeared with green pigment in places.

Vessel No. 45. This bottle (Fig. 103), of fine, polished, black ware, quadrilateral, has, by way of decoration, incised designs of the class usually found in this region. The line-work has been filled in with red pigment, and in places on the bottle, the green glauconite still remains.

FOSTER PLACE, ARKANSAS, VESSEL NO. 1. (DIAMETER, 6.6 INCHES.)

Cockayne, Boston

FIG. 104.—Vessel No. 103. Foster Place, Ark. (Height 6.4 inches.)

Vessel No. 103. This graceful bottle (Fig. 104), like others from this place, bears incised decoration showing symbols of the sun and having much of the line-work still filled in with red pigment. Traces of glauconite pigment are evident on the bottle.

Fig. 105.—Vessel No. 240. Foster Place, Ark. (Height 7 inches.)

Vessel No. 240. In this illustration (Fig. 105) is shown another bottle from this place with variations of the usual symbols, incised. The line-work has been filled with red; traces of green pigment are smeared over the bottle.

FOSTER PLACE, ARKANSAS. VESSEL NO. 56. (HEIGHT 10 [illegible] INCHES.)

FIG. 106.—Vessel No. 37. Foster Place, Ark. (Height 7.4 inches.)

Vessel No. 56. This vessel (Plate XLIII) is one of six, all more or less similar, found in a grave at the Foster Place. This vessel, coated with red pigment inside and out, has, in addition, a rather scanty, incised decoration, not overcarefully done, in which in places traces of white pigment remain.

Vessel No. 37. This bottle (Fig. 106) has a decoration on the body largely

consisting of concentric circles and on the neck, of encircling bands. On the bottle bands of red alternate with the yellow of the ware, all being defined by incised lines in which traces of white pigment remain. To this extent the decoration is polychrome which it is unusual to find south of the Arkansas river, though the general use of kaolin or of the red oxide of iron in the line-work of vessels of this region probably accounts for the presence of the white in the incised lines of the bottle.

FIG. 107.—Vessel No. 44. Foster Place, Ark. (Height 4.3 inches.)

Vessel No. 44. This bowl of yellow ware (Fig. 107) which forms a background for the scroll decoration in bands of red, presents a rather unusual feature in that the red decoration is in relief, the ware having been scraped away in the intervening areas to make it so.

FIG. 108.—Vessel No. 114. Foster Place, Ark. (Diam. 7.9 inches.)

Vessel No. 114. This graceful bowl (Fig. 108) of hard, thin ware bears incised decoration in which still linger traces of red pigment. Four equidistant projections on the rim give a pleasing appearance, breaking as they do the usual monotonous effect of the rims of vessels of this class.

A considerable number of bowls of the same graceful form this one possesses, and similarly decorated as to pattern, but varying white or red as to the pigment in the lines, and with a considerable variation as to size, came from this region.

Fig. 109.—Vessel No. 245. Foster Place, Ark. (Height 6.5 inches.)

Vessel No. 245. This vessel (Fig. 109), almost a hopeless wreck when found, and whose fragments were mingled with those of several other vessels, has been, after very protracted effort, put together with slight restoration. The form is compound—a bowl resting on another bowl. The decorations, incised, are common to the region, that of the lower vessel having the line-work filled in with white pigment, while red pigment is in the line-work of the upper vessel.

Another vessel (considerable parts of which are missing) exactly like this one save that the placing of the pigment in the lines is reversed, the red being below and the white above, was found with Vessel No. 245.

FIG. 110.—Vessel No. 38. Foster Place, Ark. (Height 4.8 inches.)

Vessel No. 38. This vessel (Fig. 110) of fine black ware, has a compound form—a bowl set on the opening of a pot. The decoration, incised, which is on the exterior upper part only, has been filled in with white pigment. The handles, which confer a graceful effect, are about 3 inches in length and are for adornment solely as the perforations in them are but partial.

Vessel No. 128. In Fig. 111 is shown a bowl from which part is missing. The incised and punctate decoration has been filled in with white pigment, much of which remains. There is, on one side (and doubtless a similar one was present on the opposite side) a figure of a quadruped modeled in relief. The tail is missing.

Vessel No. 242. This bottle (Plate XLIV), a gem of the potters' art, quadrilateral, of highly-polished, black ware, bears a carefully-executed design in which the sun-symbol has a prominent part. The line-work has been filled in with red pigment which remains in almost perfect condition. This beautiful bottle, without a blemish of any kind, was found under favorable conditions, it having been placed alone in one part of the grave some distance above the burial.

FOSTER PLACE, ARKANSAS, VESSEL NO. 242. (HEIGHT, 6.1 INCHES.)

Cockayne, Boston

FIG. 111.—Vessel No. 128. Foster Place, Ark. (Diam. 4.9 inches.)

FIG. 112.—Vessel No. 17. Foster Place, Ark. (Height 4 inches.)

Vessels Nos. 17, 21, 42, 139, 178, shown in Figs. 112, 113, 114, 115, 116, respectively, are fair examples of the form and of the incised and punctate decoration of some of the vessels from the Foster Place.

FIG. 113.—Vessel No. 21. Foster Place, Ark. (Diam. 4.3 inches.)

FIG. 114.—Vessel No. 42. Foster Place, Ark. (Height 4.6 inches.)

FIG. 115.—Vessel No. 139. Foster Place, Ark. (Height 4.5 inches.)

FIG. 116.—Vessel No. 178. Foster Place, Ark. (Height 3.5 inches.)

FIG. 117.—Vessel No. 96. Foster Place, Ark. (Height 7.4 inches.)

Vessel No. 96. This striking bottle of beautiful, polished, black ware, with wide neck flaring near the rim (Fig. 117) has a decoration based on the scroll and filled in with punctate markings.

Vessel No. 81. This vessel of yellow ware and bearing carefully-executed line and punctate decoration (Fig. 118), has the shape of many cooking-vessels from this region but shows no effect of fire.

FIG. 118.—Vessel No. 81. Foster Place, Ark. (Height 6.7 inches.)

Vessels Nos. 14, 83, 218, shown in Figs. 119, 120, 121, respectively, are cooking-vessels displaying the care bestowed on many of this class in the region of Red river in Arkansas.

Vessel No. 118. This vessel, somewhat resembling an inverted, truncated cone in shape, is coated with red pigment inside and out. There is a small shoulder below the rim on which is rude, incised decoration of parallel lines. The rim is slightly scalloped. Height 8.7 inches.

But a few feet away from the mound just under description at the Foster Place is another which has been somewhat larger than its neighbor, but much of it has been scooped out and carried away for use on the nearby levee. Numerous trial-holes put down in the remainder of this mound and around it were without success.

FIG. 119.—Vessel No. 14. Foster Place, Ark. (Height 5.4 inches.)

FIG. 120.—Vessel No. 83. Foster Place, Ark. (Height 6 inches.)

FIG. 121.—Vessel No. 218. Foster Place, Ark. (Height 7.4 inches.)

Mound near Dooley Ferry, Hempstead County, Ark.

In sight from Dooley Ferry, on property belonging to Judge J. M. Hanegan, of Hope, Ark., is a mound much worn and washed, and having a large excavation in its upper part, the work of previous diggers. It is hard to say what the original shape of the mound has been. Its present height is about 7 feet, its diameter 85 feet. No sign of bone was seen where the former digging had been, nor was anything observed indicating the presence of an aboriginal site on the surface of the adjacent field. Some digging in the remaining part of the mound showed clay of a raw, red appearance. The investigation was not pressed.

Mounds on the Crenshaw Place, Miller County, Ark.

The Crenshaw Place, of which Mr. William Nichol, of Pine Bluff, Ark., is the owner, has a considerable reputation for aboriginal relics found there, especially after the great flood which swept over Red river valley in 1908.

This plantation was in use for pasturage at the time of our visit, so that surface debris from midden sites was less evident than otherwise it might have been. Nevertheless in places were broken pottery, flint pebbles, and a few arrowheads. On the place are six mounds, shown in the plan (Fig. 122), designated by letters for greater convenience in description.

Mound A.

Mound A, oblong with a summit-plateau in the center of which is a large tree, is about 10 feet in height. It present outline is much impaired, but probably it once was square. Its present basal diameter is 150 feet, approximately. The summit-plateau, however, is 80 feet in diameter N. and S., and but 52 feet E. and W. The mound yielded no indication of having been used for purposes other than domiciliary. The digging, however, was not carried to an extent to determine the matter.

Mound B.

Mound B, about 5.5 feet in height, was furrowed by rain in places. Irregularly circular as to the base, its diameter was about 85 feet. It was composed of a mixture of clay and sand, in which the clay greatly predominated. About 3 feet from the surface this material was so hard that a pick was needed to remove it. Under such conditions one can imagine the state in which earthenware in it was recovered. This mound was fairly riddled with trial-holes, some of which, coming upon burials, were greatly enlarged.

Five burials were encountered (Nos. 1 to 5, inclusive).

Burial No. 1. This burial, the skeleton of an adult at full length on the back, heading N., lay at a depth of slightly more than 2 feet. The bones were badly decayed, as were all in this mound, none being in a condition to save. With the burial were two vessels of earthenware.

Burial No. 2 consisted of a layer of bones, including four skulls. With the deposit was a vessel of earthenware and a celt of quartzite, 4 inches in length.

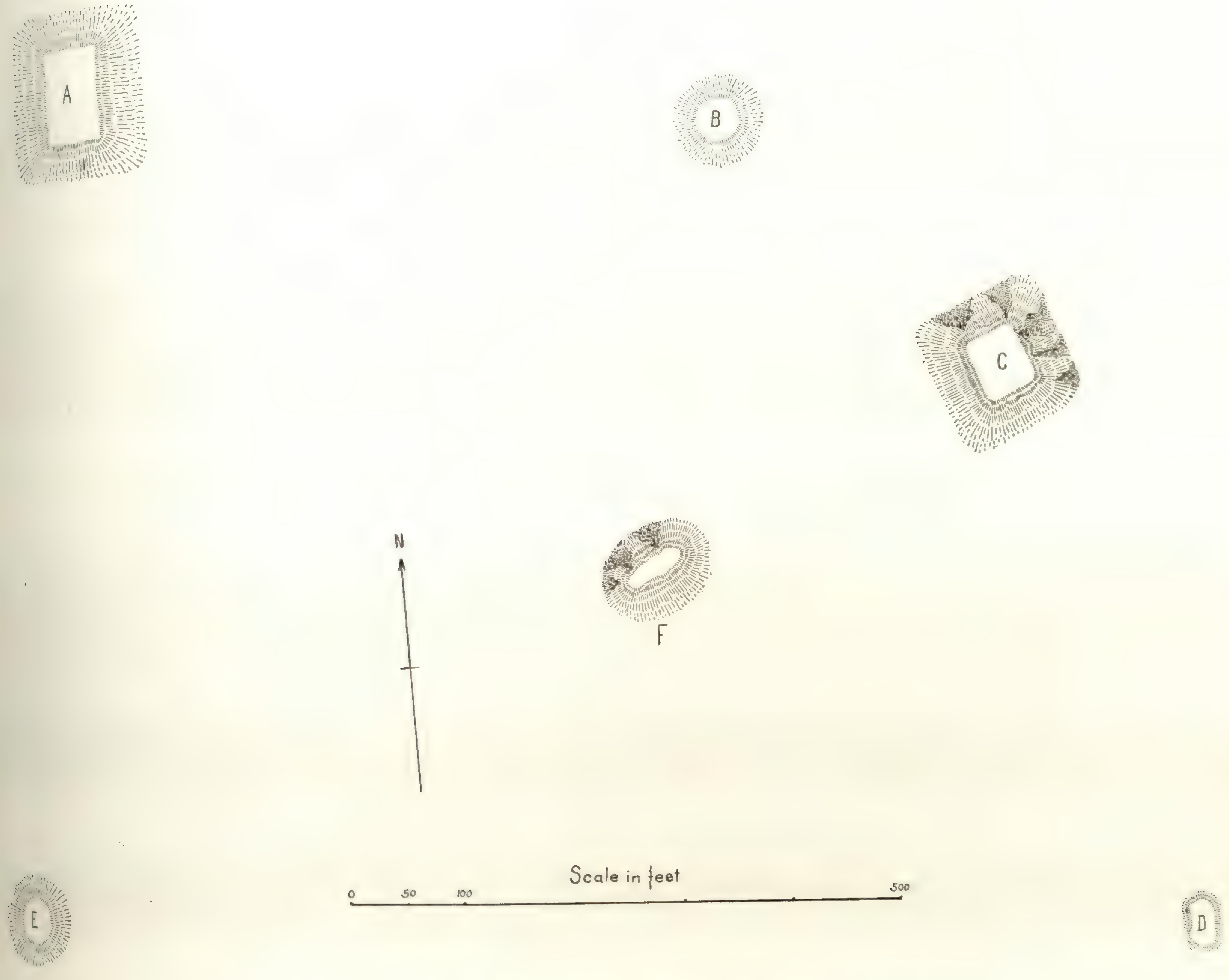

FIG. 122.—Plan of mounds. Crenshaw Place, Ark.

Burial No. 3 was a layer of bones which, beginning in the slope of the mound, at a depth of 2 feet 9 inches from the surface, continued in and ended 3 feet 9 inches below it. This great deposit of bones, which included seventeen skulls, was without arrangement save that the skulls were in two groups, one at the northwestern, and one at the southwestern, margin of the deposit; and that in one place there had been an attempt to pile the long-bones parallel and horizontal.

Along the northeastern part of the deposit of bones were arranged ten earthenware vessels, one of which contained a mass of kaolin.

Burial No. 4 was a skull and a number of other bones thrown together without order, 3 feet from the surface.

Burial No. 5, the remains of the skeleton of an adult extended on the back, the head directed SE. by S., lay 3.5 feet from the surface. With this burial were: six earthenware vessels, one containing kaolin, and a small celt which we parted with before determining its material.

One pottery vessel was found unassociated, as were four others, placed together and having with them many pebbles and the decaying remains of a shell (tortoise or turtle), seemingly a rattle. Beyond question the bones belonging to a burial with which these vessels had been had disappeared through decay.

The earthenware vessels from this mound (Nos. 1 to 24, inclusive), many of which are broken, are of coarser ware than is generally found in this region, and the incised decoration, when present, does not reach the standard of that usually found along Red river in Arkansas.

The burials in this mound were comparatively shallow, and in the main the soil above them was moist. Three of the burials, moreover, lay in different planes, their graves intersecting or intersected, so that with one exception we were unable to trace the limits of pits.

Mound C.

This mound has been quadrangular, but previous digging into its sides and wash of water have greatly impaired its outlines. Diameters measured in two directions were each 127 feet; but the summit-plateau in the same directions, WSW. and ENE., NNW. and SSE., is, respectively, 45 feet and 54 feet across.

Eight trial-holes were sunk from the summit-plateau, some of which were considerably enlarged. These holes came upon three burials (Nos. 6 to 8, inclusive).

Burial No. 6, which was 5.5 feet from the surface, consisted of a skull only, the rest of the skeleton presumably having disappeared through decay. It was impossible to determine if the burial lay in a pit, the ground surrounding it, clayey sand, showing no difference between it and the material composing most of the rest of the mound. It is certain, however, that a pit did not extend from the surface down, as a dark layer, entirely undisturbed at this place, covered that part of the surface of the plateau where this burial was found, to a depth of 2 feet.

At the left of the skull were fragments of sheet-copper, and a very small object of the same material, elliptical in outline and concavo-convex. This object, with others once probably like it but broken when found, perhaps had been attached to some kind of head-dress.

Burial No. 7. This burial, the badly-decayed skeleton of an adult, at full length on the back, heading SE., lay at a depth of 4 feet 10 inches. Near the skull was a coarse cooking-pot (Vessel No. 25). We could reach no conclusion as to whether or not this burial lay in a grave-pit.

Burial No. 8 was a full-length skeleton of an adult, very badly decayed, the head directed SSE. The skeleton lay at a depth of 4 feet in material that gave no satisfactory evidence as to having been dug and filled in.

Mound D.

This mound, entirely of sand, had lost portions by the work of a previous digger who had used a scoop drawn by horses. There is an irregular remainder, 50 feet by 30 feet in diameter and 6 feet high. This altitude probably represents the height of the mound previous to the flood, as it is not likely the water rose above this seemingly central part of the mound.

Trial-holes were sunk all over the remainder of the mound and also were put down in numbers in parts from which much had been washed away, in the hope of coming upon burials that were too deep to have been affected by the wash. In point of fact such burials were found.

Five burials, Nos. 9 to 13, inclusive, were encountered in this mound, the maximum depth being 5 feet.

Burial No. 9. This burial, represented only by the crowns of teeth, was associated with four vessels of earthenware, one of which contained a mass of white and of red clay mingled. This mass did not cover the lower part of the vessel as is usually the case when pigment is found in vessels in the mounds, but seemed to have been molded into shape before its deposit. The dimensions of the mass were 5.5 inches by 4 inches by 1.75 inch. Just outside the opening of the containing vessel, which lay on its side, was a mass of similar material, of like size and shape.

Burial No. 10. A deposit of cremated remains 14 inches by 5 inches in extent. Calcined fragments were found of a size to show that the bones had belonged to the skeleton of an adult.

Burial No. 11. This burial, consisting of two skulls about one foot apart, had no other bones, nor were any artifacts present. The skulls lay near the surface in a part of the mound that had been subjected to wash, and perhaps had been dislodged by the water and again covered with a deposit of sand. About one foot from one of the skulls was a slender arrowhead of flint.

Burial No. 12. The remnants of a skeleton heading SSE. The ribs had entirely disappeared, as had many other parts. Near the left side of the skull were nine delicate arrowheads of flint whose arrangement was not determined owing to disturbance in removal.

Burial No. 13 had been a skeleton, presumably, though no other bones were found with the cranium, near which were two flint arrowheads and an earthenware vessel.

Two vessels were found apart from human remains.

The seven vessels from Mound D (Nos. 26 to 32, inclusive) were of a coarse, heavy ware, and almost without decoration. Most of them were badly broken.

MOUND E.

This mound is in woods that adjoin the field in which the other mounds are. Its height is 7 feet. The diameter of its circular base is about 85 feet. The mound, which was carefully dug into, yielded no indication of having been used for burial purposes.

FIG. 123.—Vessel No. 20. Crenshaw Place, Ark. (Height 7.5 inches.)

MOUND F.

Mound F had been badly washed by rain, perhaps coursing through unfilled diggings into its sides. It is elliptical in outline of base and is almost pointed. Its height is 21 feet. Its basal diameter N. by W. and S. by E. is 84 feet. The diameter taken through the mound at right angles to the foregoing is 106 feet.

This mound, which seems to be a mixture of sand and clay, largely clay, gave no indication of superficial burials. Its size is such that an attempt to investigate the base would have involved the destruction of the mound.

Considerable digging in the level ground where midden-debris was seen on the surface, yielded only negative results.

A number of small arrowpoints, all surface finds, were rudely made, some being hardly more than flakes chipped into the outline of arrowpoints, and differed materially from the points found with burials at this place, upon the making of which much care had been bestowed.

The pottery from the Crenshaw Place, thirty-two vessels in all, as stated, is of inferior quality as a rule. The following vessels merit special mention.

Vessel No. 20. This bottle, coated exteriorly with red pigment and having in relief two lizard-like figures on opposite sides, well illustrates the saying that misfortunes never come singly, inasmuch as the head of one lizard was lost in aboriginal times previous to the interment of the vessel, and that of the other disappeared under the blow of a spade in the hands of one of our diggers (Fig. 123).

FIG. 124.—Vessel No. 21. Crenshaw Place, Ark. (Height 4.5 inches.)

Vessel No. 21. This vessel (Fig. 124) has incised and punctate decoration in combination with series of circular markings, perhaps conferred with the aid of an end of a reed. There are holes for suspension on two opposite sides below the rim.

Fig. 125.—Vessel No. 23. Crenshaw Place, Ark. (Height 4.1 inches.)

Fig. 126.—Vessel No. 6. Crenshaw Place, Ark. (Height 5.1 inches.)

Vessel No. 23. This bowl has a rude scroll decoration in addition to circles and triangles filled in with imprints similar to those on the vessel just described. The ware is brown and of inferior quality. The upper part of the body is quadrilateral and the rim rises equidistantly in four places (Fig. 125).

FIG. 127.—Vessel No. 11. Crenshaw Place, Ark. (Height 9.7 inches.)

Vessels Nos. 6 and 11, shown in Figs. 126, 127, respectively, are examples of cooking-vessels from this place.

Mounds on the Daniels Place, Hempstead County, Ark.

In woods, on the Daniels Place, for which Mr. Steve Carrigan, who has shown many courtesies to the Academy, is agent, but a short distance in from the river, is a mound, quadrangular with rounded corners, about 12 feet in height; it, however, appears of much greater height when viewed from a deep depression nearby, whence came the material for its making.

The mound NNE. and SSW. has a basal diameter of about 210 feet, of which 155 feet is covered by the summit-plateau. In width the mound has a diameter of 105 feet, the summit-plateau in the same direction being 60 feet.

Toward the southern end of this mound, built upon the summit-plateau, is a mound, circular in outline, with a basal diameter of 35 feet. The height of this little mound, which is almost entirely of sand, while the great mound seemed to have much more clay than sand in its composition, is 3 feet. This small mound, which we attacked with great expectations, yielded nothing whatever. Trial-holes in the large mound were equally unsuccessful.

A few yards distant from the northern end of the great mound is an irregularly-circular one slightly more than 4 feet in height, with a diameter of about 70 feet. This mound has a circular summit-plateau 32 feet in diameter.

Five or six yards from the southern end of the great mound is another mound, somewhat smaller than the one at the northern end. Thorough digging into both these mounds was without success.

In the woods, in the neighborhood of the northern end of the great mound, were three small ones, the largest of which had a diameter of 35 feet and a height of 2.5 feet. These mounds were carefully dug but gave no evidence of having been used for burial purposes.

Mounds on the Jones Place, Hempstead County, Ark.

On the Jones Place, which belongs to Dr. H. L. B'Shers, of Fulton, Ark., are three small mounds, near one another (two being almost contiguous), and all in sight from the landing. On one is a dwelling and an outhouse; the other two have been largely dug into.

The mound occupied by the buildings was not investigated by us, and the less-dug of the two other mounds yielded nothing to our search, though trial-holes were put into it and into some elevated ground extending from it into an adjacent, cultivated field, on which was some aboriginal debris from dwelling-sites. The other mound, circular, about 55 feet in basal diameter, had centrally a circular excavation 25 feet in diameter at the top, but converging. This excavation, made, we are told, by a former owner of the property, was not altogether deep, though diggings of small diameter extended well down in places.

The original height of this mound was indeterminate as the excavation referred to had been made long enough in the past to allow the soil thrown out at that time to become covered with vegetation and to appear similar in all respects to the mound itself. Probably the original height of the mound was between 3 and 4 feet.

Considerable digging in this mound came upon three burials, the depths of which were not taken as the interments lay below that part of the mound where the previous digging had been. These burials were all deposits of cremated human remains, respectively: 4 feet by 6 feet, by 3 inches in thickness;[1] 2 feet 3 inches by 3 feet 9 inches, and 4 inches thick; 1 foot 2 inches by 1 foot 10 inches, and 3 inches thick. These burials, seemingly, had been cremated in place, as charcoal and much clay hardened and discolored by fire lay with them. Whole bones lay in the deposit in places. The bones evidently had been exposed to great heat and fell into fragments on removal. In one instance (the bones of a right arm extended) the same degree of heat had not been applied throughout. The upper part of the humerus was calcined, and the soil above and below it showed the effect of intense heat. Toward the lower part of the arm, however, the heat had been less, as shown by the condition of the bone and of the surrounding soil, and also by the presence of charcoal. The bones of the hand were but slightly burnt; the soil was dark rather than red and the material which had served as fuel was only charred.

With one deposit were a calcined bit of deer antler and calcined bones not human. With another deposit was a cooking-pot in fragments. The deposits of calcined bones lay on the same level in the mound. Twenty-eight inches below their level, apart, were two rude vessels intended for culinary purposes.

Mounds near the Jones Place, Hempstead County, Ark.

About one-half mile N. by E. from the mounds on the Jones Place, on property belonging to Mr. J. B. Shults, of Fulton, Ark., in woods, near a "lake", a former course of Red river, are three mounds in sight of one another and in full view from the road. One of these mounds had been badly dug into in two places, but the remaining two seemingly were intact.

Mound A.

This mound, the westernmost of the group, previously untouched, was 42 feet across its circular base and had a height of 3 feet 3 inches. This measurement, however, presumably was made from where there had been some filling in by wash of water, as a measurement taken in the course of digging, from the summit of the mound to an unmistakable base-line, showed the original height to have been 4.5 feet.

The mound was made of a mixture of sand and clay. Eight trial-holes, most of which were greatly enlarged later in the digging, all came upon the dark basal layer to which reference has been made. The holes in the central part of the mound showed on this layer the presence of charcoal and burnt clay. One hole near the center, in addition to the burnt material, came upon an earthenware bottle lying on its side upon the layer.

[1] A part of this deposit had been removed by the previous digging.

CONTENTS.

[1]Clarence B. Moore. Some Aboriginal Sites on Red River. Plates XXXVII–XLIV 483

[2]Aleš Hrdlička. Report on Skeletal Remains from a Mound on Haley Place, near Red River, Miller County, Arkansas 639

[1] Extra copies printed for the Author, October 24, 1912.
[2] Extra copies printed for the Author, October 24, 1912.

The central trial-hole, at a depth of 1.5 feet, laid bare a deposit of very fine, gray ashes, carefully heaped together, evidently the remains of a cremation of a human body, though no particle of bone found in the deposit was of a size to give any indication as to this. A considerable quantity of the deposit, however, was examined by Doctor Keller, who says that it consists largely of bone ash and contains large proportions of carbonate and phosphate of lime.

FIG. 129.—Head of bone pin. Near Jones Place, Ark. (Full size.)

This deposit, which was irregular in outline, was, roughly speaking, 21 inches by 15 inches; the thickness of most of it was 1.75 inch, though a kind of pocket included in the deposit, 4.5 inches in diameter, had a depth of 13 inches.

Above the deposit and extending out around it in all directions charcoal and masses of clay had been piled. This material had been placed on the undisturbed basal layer, which was evidently the original surface before the mound was built. The thickest part of this superimposed heap was 16 inches.

Much of the clay showed the former presence in it of fibrous vegetable material which, no doubt, had fulfilled the same office for the clay that hair does for mortar. Also on the clay were imprints of posts. Presumably this burnt clay was what remained of a wigwam after burning, as it is well known that among some of the aborigines the burning of the house of a deceased occupant was part of the funeral obsequies.

In the deposit of gray ashes, and outside of it in the burnt clay, were three short, piercing implements of calcined bone and

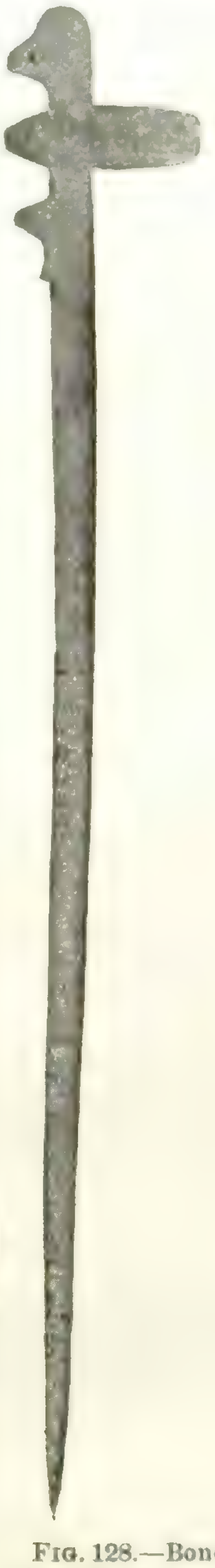

FIG. 128.—Bone pin with head representing a hatchet. Near Jones Place, Ark. (Full size.)

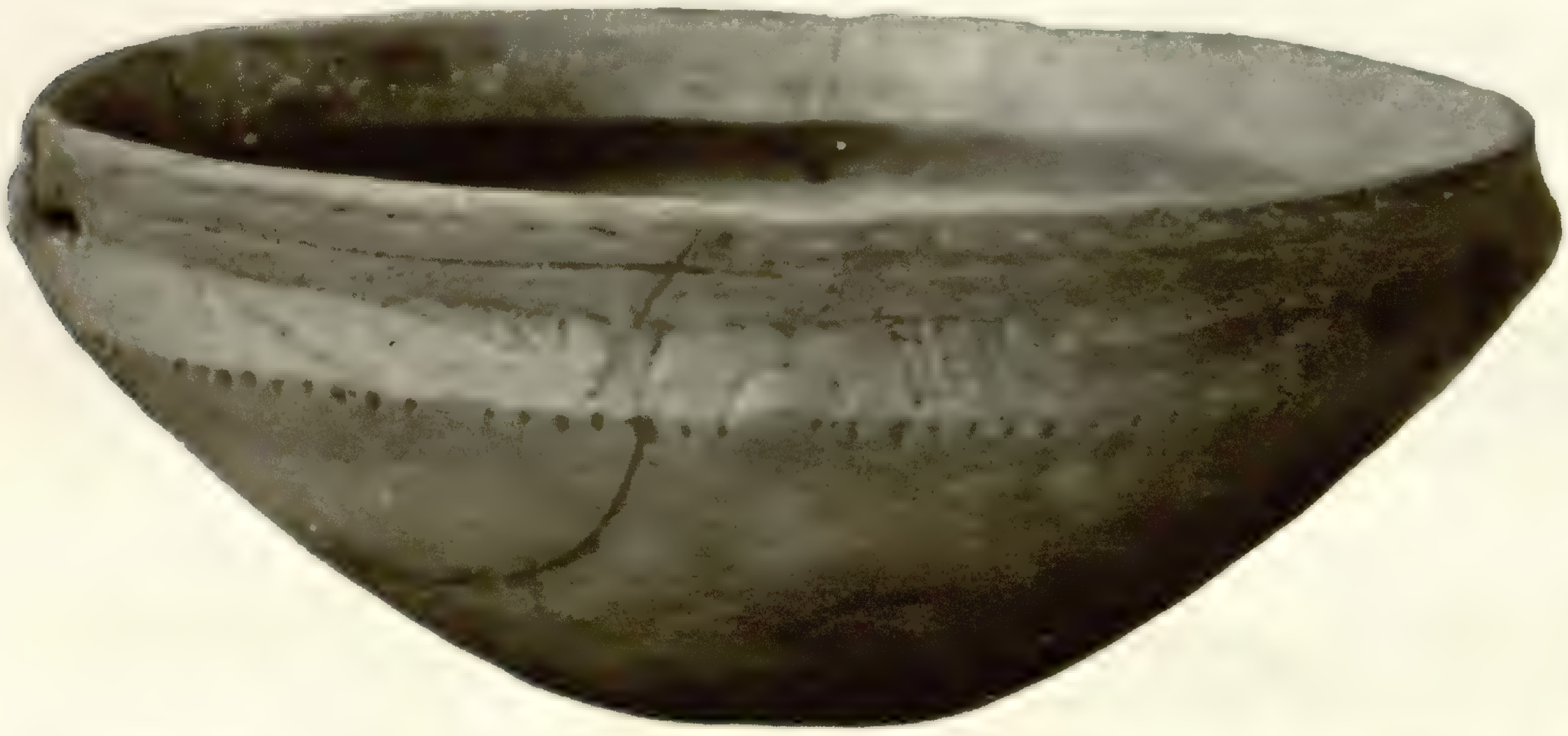

FIG. 130.—Bowl covering cremated remains. Near Jones Place, Ark. (Diam. 7 inches.)

many fragments of long pins of the same material. The three entire piercing implements are each about 1.5 inch in length and have shallow notches on one side of the upper end. Out of the fragments one whole pin has been put together

having a head representing a celt let into a handle. This handsome specimen is shown in Fig. 128. The head of another pin (Fig. 129) unfortunately has lost the extremities of two expanding arms which doubtless represented some ceremonial implement. These pointed implements of bone, for some reason, have withstood the heat better than did the human skeletal remains.

Lying on top of the deposit of ashes were two ear-plugs of shell badly broken by heat, though the complement of parts was together. These ear-plugs are annular and of the kind around the periphery of which is a groove enabling the ornament, as it were, to button into the lobe of the ear.

Inverted and pressed down into the heap of ashes and filled with the material was a bowl of about one pint capacity (Fig. 130), somewhat crushed but having all the parts in place.

Under the clay, at the edge of the ash deposit, were twenty-eight delicate arrowheads of flint, many serrated. Most of these points, which range between .8 inch and 1.25 inch in length, are shown in Fig. 131. They were not arranged in a

Fig. 131.—Arrowheads of flint. Near Jones Place, Ark. (Full size.)

pile, but lay together within a circumscribed space. Five are imperfect, perhaps through the somewhat rough sifting necessary to recover them from the material in which they were, or possibly through the effect of heat.

Under the burnt clay were widely scattered fragments, which, collected and put together, proved to be a chisel-shaped ceremonial axe of quartzite, 8.1 inches in length. Half of a similar object, also of quartzite, was found in the material thrown out from this deposit in the course of digging.

Around and over the deposit of ashes were fragments belonging to a number of earthenware vessels, including several bottles, but presumably all the fragments were not present in the neighborhood of the deposit of ashes, since everything taken from there by us was carefully sifted without finding sufficient parts to put the vessels together. As, however, parts of the same vessel often were separated by a considerable distance, it is possible that fragments of vessels not found lay farther out in the mound than our digging extended.

Possibly the vessels originally had been placed around the body before its cremation and, later, when material was collected to pile over the deposit of ashes, some parts of the vessels were gathered up with the clay while other parts may have been left behind. Lumps of burnt clay were found scattered at considerable distances from the deposit of ashes. The arrowheads and the ear-plugs must have been placed with the deposit after the cremation, since they were not separated, as they would have been had they been swept up with the cremated remains.

A part of a most unusual object of earthenware was found in four widely separated fragments. These fragments, when put together, form the handle of a ladle, with a small part of the bowl. This handle, of heavy ware, 14.5 inches in length and 1.25 inch in maximum diameter, is hollow, circular in transverse section, and tapers to a blunt point. Unfortunately, none of the very many fragments of pottery recovered from this mound united with the handle, though the sherd belonging to the opposite side of the bowl-part was found, on which is a depression indicating that the bowl and handle formed a ladle patterned after a gourd.

FIG. 132.—Vessel No. 2. Near Jones Place, Ark. (Height 1.9 inches.)

FIG. 133.—Pipe of earthenware. Near Jones Place, Ark. (Full size.)

The pottery vessels from this mound, as indicated by their fragments, are inferior, and the decoration, when present, was carelessly done. A small cooking-vessel from this mound is shown in Fig. 132. Two pipes, however, or rather part of a pipe and another in fragments which have since been put together (Fig. 133), are of excellent ware. The pipes are similar, each having a polygonal figure in relief on the base.

In this mound we have an interesting example of cremation of human remains and of the building of a mound over them. There can be but little question that the wigwam was burnt over an area that later formed the central part of the base of the mound, but we are unable to determine whether or not the human remains were cremated at the same time. It is clear, however, that these remains, where-

ever they were incinerated, were carefully gathered into a heap and occupied much less space than they originally did, and that over them and around them was piled some of the material left from the burning of the wigwam.

Mound B.

Mound B, the northernmost of the three mounds, was circular in outline, with a basal diameter of about 38 feet and a height of 3 feet, approximately. The mound, however, as in the case of Mound A, presumably had undergone a deposit of material around its lower parts, which, by raising the level of the surrounding area, had correspondingly decreased the height of the mound.

Previous diggers had made two considerable trenches in this mound, without, however, having carried them to a depth to determine its nature, even had they possessed the experience to do so.

There was put down by us in this mound a central excavation 25 feet square, which included much of the former digging, passed beyond it, and at a depth of about 5 feet reached the dark layer, about 3 inches in thickness, which marked the original surface of the ground. On part of this layer had been a fire-place, and part of a grave was apparent, cutting through the fire-place and through the dark basal layer. The fire-place was clay, hardened and reddened by heat. It was distinctly not the remains of a burnt wigwam, but may have been the hearth of such a structure.

The grave proved to have a length of 10 feet 10 inches, a width of about 7 feet, and a depth below the base-line of somewhat more than 8 feet.

This grave-pit had been dug prior to the building of the mound, as was clearly shown by the material that had been used in filling the pit, which was mixed and which contained many masses of hard, red clay from the fire-place, through part of which, as noted, the pit had intruded.

On the other hand, the mound contained no masses of burnt clay, but was composed of two or three layers of sand and clay mixed, differing somewhat in shade. These layers were intact. Here, then, as at the Haley Place, an account of which has been given in this report, a grave had been dug from the surface of the ground, and, when filled, a mound had been erected over it.

The grave, in its major dimension, extended within two or three degrees of N. and S. The skeleton, that of an adult, at full length on the back, had the head directed S. From the upper surface of the burial to the original surface of the ground was a distance of 7 feet 9 inches.

This mound, unfortunately, was on bottom-land and near a swamp whose supply of water depended on Red river, which at the time of our visit was in flood. The depth at which the skeleton lay was below water level. While the foregoing data as to the burial were being obtained, part of the wall of the excavation caved in and the lower part of the pit filled with water.

Although an additional day, with a force of sixteen men, was devoted to reaching the burial again, the quicksand entered the lower part of the digging faster than

the material could be removed, so that all that was recovered from the burial were parts of three vessels of earthenware from near the feet, which were come upon at arms length through the sand and water. One of these, shown in Fig. 134, more complete than the others, has been put together.

As the river was rising rapidly and the flow of quicksand was increasing, and the walls of the excavation were falling, we were compelled, with great reluctance, to abandon our efforts to uncover the burial.

FIG. 134.—Vessel of earthenware. Mound B, near Jones Place, Ark. (Height 4.8 inches.)

MOUND C.

Mound C, the easternmost of the group, was irregularly circular in outline, with a diameter of 40 feet. Its height, measured from the surface, was 2 feet. An excavation 7 feet by 11 feet in the central part of the mound was carried to a depth of about 5 feet. No sign of burial was encountered, and the last two feet of the excavation was carried through clear, yellow sand without sign of disturbance.

MOORE PLACE, MILLER COUNTY, ARK.

The Moore Place, still another of the plantations which Mr. Henry Moore, Jr., of Texarkana, Ark., so courteously placed at the disposal of the Academy for investigation, was visited by us with the cordial consent of Mr. Floyd Thompson, of Texarkana, its lessee.

Beside the road which passes the Moore Place, on the western side, is the remainder of a mound, part of which has been cut away by the road and part on the opposite side has been leveled through cultivation. This remainder of a mound had a height of 4 feet, a diameter of about 60 feet. It was composed of clay and sand, the sand predominating.

FIG. 135.—Vessel No. 3. Moore Place, Ark. (Height 4.5 inches.)

The mound presumably had been circular, with a summit-plateau about 28 feet in diameter, which still remained. Into this plateau were put fourteen trial-holes, some of which were considerably enlarged.

Three burials were encountered, two being of children (Burials Nos. 1 and 3) at a depth of 3 feet 4 inches. One of these burials had cut through the other in part, breaking some of the vessels that were with it.

The third burial (No. 2), the skeleton of an adult at full length on the back, lay at a depth of 4 feet, the head directed NW. by N. This burial was without accompanying artifacts, a very unusual condition in the case of aboriginal burials in this region.

Burial No. 1 had at the right shoulder a small bottle with a faint, trailed decoration on the body and extending over the neck. At the outer side of the left humerus was a bowl, and at the outer side of the right femur a small cooking-pot carefully decorated with trailed and incised line-work (Fig. 135).

Near the skull of this burial were: a shell hoe (*Unio trapezoides*) having the usual perforation; part of the lower jaw of a deer, such as is described as having been used by the Iroquois for scraping maize from the cob. There was considerable midden-debris with these objects, and their presence near the burial may have been accidental.

Burial No. 3, that of a child, which we have described as an aboriginal disturbance, had with it four vessels, three badly broken, the fourth an undecorated pot without a rim.

Careful observation failed to distinguish grave-pits in the body of the mound. Presumably the mound originally was not so high as our measurement made it, the measurement perhaps being taken from a depression. In this event one may suppose that shallow burials dug from the original surface had a low mound built over them.

A few yards east of the mound just described was an irregular rise in a cultivated field, about 2 feet in height and 50 feet in diameter. This evidently had been a dwelling-site, as bits of pottery and fragments of flint were scattered over the surface. Considerable digging at this place, however, failed to come upon burials, although fire-places were discovered.

In the cultivated field in sight in an ENE. direction from the two places described, itself under cultivation, was a mound, circular in outline, with a basal diameter of about 65 feet. Its height was slightly less than 6 feet.

A central hole 8 feet by 9 feet and with a minimum depth of 6 feet, was carried to a considerably greater depth in places. The mound proved to be of the same material throughout, a yellow-brown mixture of clay and sand, largely sand. No indication of grave-pits was noted, nor was bone or artifact encountered.

Near this mound were two rises of the ground having superficial indications of former aboriginal occupancy, though our digging in them yielded no return.

On the edge of the field, and in sight from the mound last described, was the remainder of a mound, originally low, which had been reduced by cultivation, and into which a large hole had been dug. Careful digging into this mound was likewise fruitless.

Mounds on the Summerhill Place, Bowie County, Texas.

There are said to be three mounds of fair size on this place (which does not take its name from the present owner), about one mile back from the river. As we were unwilling to accede to the owner's condition that every object found during the investigation should become his property, the mounds were not dug into by us.

Mounds on the Moores Place, Bowie County, Texas.

On the Moores Place are two mounds of moderate size, on one of which were two buildings. The other mound had been very largely dug into. Although the owner of the property, Mr. E. H. Moores, who resides upon it, was willing to permit investigation, it was decided not to attempt it under the circumstances.

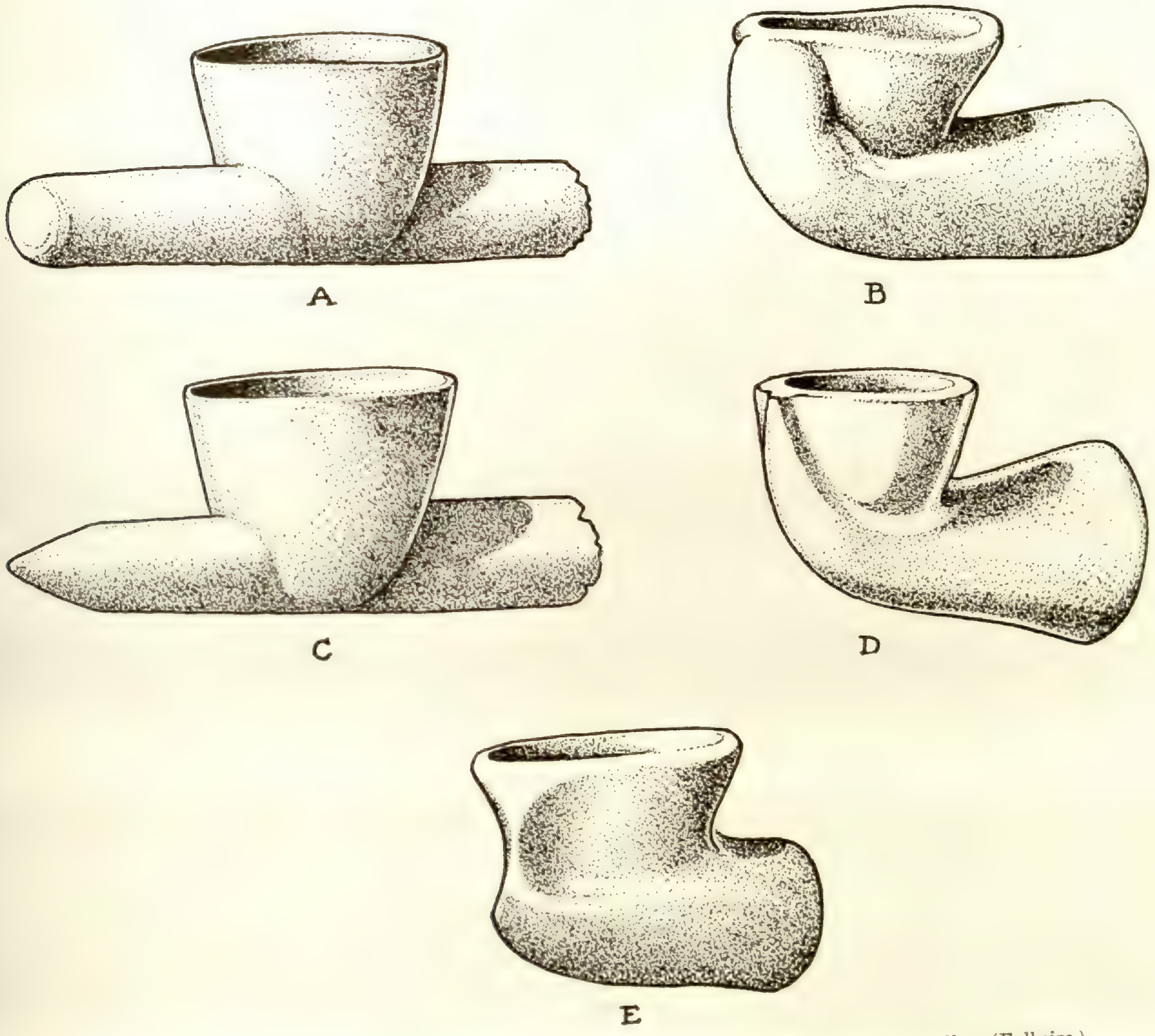

Fig. 136.—Pipes with horizontal projections; others showing these projections turned vertically. (Full size.)

Mound on the Sanders Place, Bowie County, Texas.

On the Sanders Place, formerly known as the James Place, is a mound about 15 feet in height. The owner of this place was not within reach and the tenant did not care to assume responsibility of permitting investigation.

Thirty-seven miles by water, above Fulton, somewhat farther up Red river than the place last referred to, our investigation of the antiquities of Red river ended.

Numerous earthenware pipes found in the mound at the Haley Place, Ark., as set forth in this report, have continuations of the stems projecting horizontally beyond the bowls which projections, as we have said, probably bring the pipes into the platform, or "monitor" class.

On pipes from the McClure Place, and the Foster Place, Ark. (sites somewhat farther up Red river than the Haley Place), these projections are seen turned up vertically against the bowls of the pipes, as shown in the accounts of these places.

For fuller comparison, in Fig. 136 are shown: *A*, a pipe from the Haley Place; *B*, a pipe from the McClure Place; *C*, a pipe from the Haley Place; *D*, a pipe from the Foster Place.

E, a pipe from the Foster Place, shows where the projection, turned vertically, has become conventionalized and is hardly more than an indication.

REPORT ON SKELETAL REMAINS FROM A MOUND ON HALEY PLACE, NEAR RED RIVER, MILLER COUNTY, ARKANSAS.

By Dr. Aleš Hrdlička.

The skeletal remains submitted to the writer by Mr. Clarence B. Moore for examination were marked "Burial 5" and "Burial 9," Haley Mound, Red river, Miller County, Arkansas. They consist of two skulls with their lower jaws and parts of one of the skeletons.

The specimens show yellowish-brown discoloration. They are not perceptibly mineralized, and all the bones contain some animal matter. The left humerus of the skeleton from Burial 9 shows at its middle a large patch stained green, the result of decomposed copper (or brass).

The two subjects were plainly male adults, and the skulls are both artificially deformed, the deformation being of the "Flathead" variety. The deformation is exactly such as is seen in four crania from mounds on the McClure Place, near Red River, Miller County, Ark., which came from Mr. Moore in the same consignment; and it is also identical in type with that exhibited in numerous skulls from Arkansas and Louisiana collected by Mr. Moore on former expeditions.[1]

Fig. 1.—Skull. Burial No. 9. Mound on the Haley Place, Ark.

Owing to the artificial deformation, which is quite pronounced, the original form of the skulls is not ascertainable. It is evident, however, that both belonged to individuals of strong muscular development and of probably more than medium stature; the latter conclusion is substantiated by the dimensions of the remnants of long and other bones belonging to Burial No. 9, the cranium of which is shown in Fig. 1.

The skulls (which now bear numbers 272,543 and 272,544 U. S. N. M.) show a good internal capacity, that of Burial No. 9 (272,543) reaching 1600 c.c., Burial No. 5 (272,544) which is slightly less capacious, is damaged and exact measurement in this respect is not possible.

[1] Report on a Collection of Crania from Arkansas. Journ. Acad. Nat. Sci. of Phila., Vol. XIII, 1908, pp. 558–563.
Report on an Additional Collection of Skeletal Remains from Arkansas and Louisiana. Journ. Acad. Nat. Sci., Phila., Vol. XIV, 1909, pp. 173-240, 9 Figs.

The various anthropologic features of the skulls, so far as they have not been altered by the deformation, show the prevailing characteristics of Indian crania of the neighboring regions, so far as is known from Mr. Moore's former explorations. The orbits are of medium or slightly above medium height; the nasal aperture is mesorhynic; the nasal spine is very low; the upper alveolar process is rather high and quite markedly prognathic. The palates are large, and the mandibulæ strongly developed, indicating powerful muscles of mastication and considerable use of the jaws.

Skull 272,543 was that of an aged individual; it shows advanced obliteration of the sutures of the vault, and also the loss of all the teeth with the exception of one of the lower canines and one upper molar. The teeth, however, were not lost through senility. The free borders of the dental arches present throughout signs of an inflammatory process, and it was probably this which led in the main to the loss of the teeth, to the pronounced scarring, and in the posterior parts of the upper arch to some thickening.

On the left side and in the immediate neighborhood of the nasal aperture of skull 272,543 there is seen, on the surface of the left upper maxilla, a marked swelling which, on closer examination, is found to consist of hypertrophy of the bone about the root of an impacted tooth, possibly the left upper canine; traces of the crown of this tooth are visible in the edge of the dental process below.

Skull 272,544 belonged to an adult about 50 years of age. In this specimen most of the teeth are preserved, though showing advanced wear.

Neither of the crania, nor any of the bones that accompany them, show signs of injury in life, or of disease, with the exception of the remnants of the lumbar vertebræ from burial Number 9. The bodies of these vertebræ (particularly those of the third and fifth) show pronounced marginal exostoses, and that of the third shows in addition plain traces of branched fracture in the anterior part of its upper surface. The bone was evidently weakened through senile changes and fractured by some sudden increase in weight, or a shock, from above.

The remnants of the long-bones show no features worthy of special mention. The left humerus measures 33.1 cm. in length, its maximum and minimum diameters at middle being 2.35 and 1.85 cm. The left tibia measures, at middle, antero-posteriorly, 3.4 cm.; laterally, 2.5 cm. A comparison of these remains with those from the McClure mounds shows dissimilarity in color, the specimens from the latter site being somewhat lighter; otherwise the bones present close relationship. The difference in color does not necessarily indicate difference in age.

The collection includes also two crania marked "Mound A, near L'Eau Noire Bayou, Avoyelles Parish, La. (Red River), Burials 33 and 35." These two specimens differ to some extent from both of those from the Haley Place and from those of the McClure mounds. They exhibit only slight fronto-occipital compression, and permit the recognition of a subdolichocephalic or dolichocephalic type. It is quite possible that these crania belonged to people of a tribe different from that to which the two lots mentioned above pertained. The skeletons from the Haley Place and the McClure mounds may probably be safely ascribed to an extension of the Natchez people.[1]

[1] Compare Swanton, J. R., Indian Tribes of the Lower Mississippi Valley, etc. Bulletin 43, Bureau of American Ethnology, Washington, 1911.

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